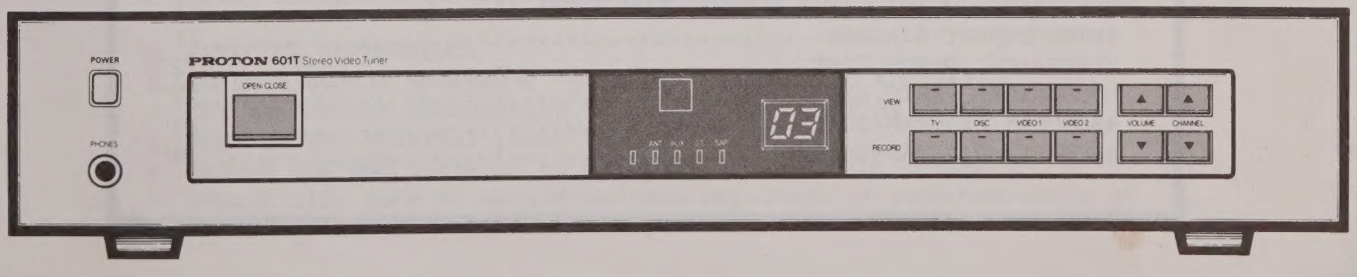
ME-11488

PROTON SERVICE MANUAL

601T

STEREO VIDEO TUNER



CONTENTS

SPECIFICATIONS 1
ADJUSTMENTS 1
BLOCK DIAGRAM 6
CIRCUIT DIAGRAM 10
PCB PARTS LOCATION(TOP VIEW/BOTTOM VIEW) 13
INTERCONNECT DIAGRAM 21
ELECTRICAL PARTS LIST 22
MECHANICAL PARTS LIST 27
ASSEMBLY DIAGRAM(601T) 28
ASSEMBLY DIAGRAM(601R) 29

ME-11488

SPECIFICATIONS

1. Television System: NTSC
2. Channel Coverage: VHF: 2-13 UHF: 14-83
   CATV: 2-13 A-EEE
3. Antenna: VHF and CATV: 75 ohm
   UHF: 300 ohm
4. Inputs:
   VIDEO-DISC: 1.0 Vp-p Composite Video 75 ohm
   -VIDEO 1:1.0 Vp-p Composite Video 75 ohm
   -VIDEO 2:1.0 Vp-p Composite Video 75 ohm
   AUDIO-DISC: 150-300mV @ 47K ohm 2 Channel (L&R)
   -VIDEO 1:150-300mV @ 47K ohm 2 Channel (L&R)
   -VIDEO 2:150-300mV @ 47K ohm 2 Channel (L&R)
5. Outputs:
   VIEW-VIDEO 1 and 2 (To Monitor): fixed Level 1.0 Vp-p
   Composite Video 75 ohm
   AUDIO 1: Variable Level 2 Channel (L&R)
   AUDIO 2: Fixed Level 2 Channel (L&R)
   RECORD: VIDEO 1and 2 (To VCR): Fixed Level 1.0 Vp-p
   Composite Video 75 ohm
   AUDIO 1 and 2: Fixed Level 2 Channel (L&R)
6. Tuning Speed (Scan Time): 375ms/ch
7. AGC Range: 80dB (Typically 90 dB)
8. Audio Frequency Response: 20Hz-20kHz +-3dB
9. Tone Control: Bass +-10dB
   Treble +-10dB
10. Connects: Video and Audio--RCA Phone Jack
11. Power Requirements: AC 120V 60Hz
12. Power Consumption: 25W (operate)
    5W (standby)
13. Dimensions(WxHxD): 16.5x2.56x13 inch
    420x65x330mm
14. Weight: 17.6 lb (8 kg)

ADJUSTMENTS

NOTE: 1. Warm up the set for abont 10 minutes before making adjustment.
2. Set 601T to TV mode unused channel and disconnect external antenna from it.

(1) VIDEO IF ADJUSTMENT

A. PREPARATION
1. Set VR 101 (RF AGC) at center position.
2. Connect Swemar generator "output" lead to tuner TP through "mathcing pad" as shown in figure 1 and 2.
3. Apply + 12V to the point "12V" and BH.
4. Apply MGC Voltage. (0-8V) to TP-14
5. Break J50 point on copper side of chassis

B. DETECTOR ADJUSTMENT:
1. Connect swemar generator "from TP" output lead to TP-15
2. Set the output attenuators of swemar generator at 30 dB.
3. Turn on the external power supply.
4. Adjust the MGC voltage. to maintain 2Vp-p on the scope.
5. Adjust L106 core to obtain maximum amplitude of response curve at 45.75 MHz marker as shown in Figure 3.

C. OVERALL RESPONSE CURVE ADJUSTMENT:

1. Connect a damping resistor 220 ohm in parallel with L106
2. Turn on the external power supply.
3. Adjust the MGC voltage to maintain 2Vp-p on the scope.
4. Adjust tuner IFT to obtain P (45,75MHz) and S.C. (42.17MHz) markrs at same level dropped 6dB from peak point as shown in figure 4.
5. Turn off the power supply then take off lead and damping resistor.

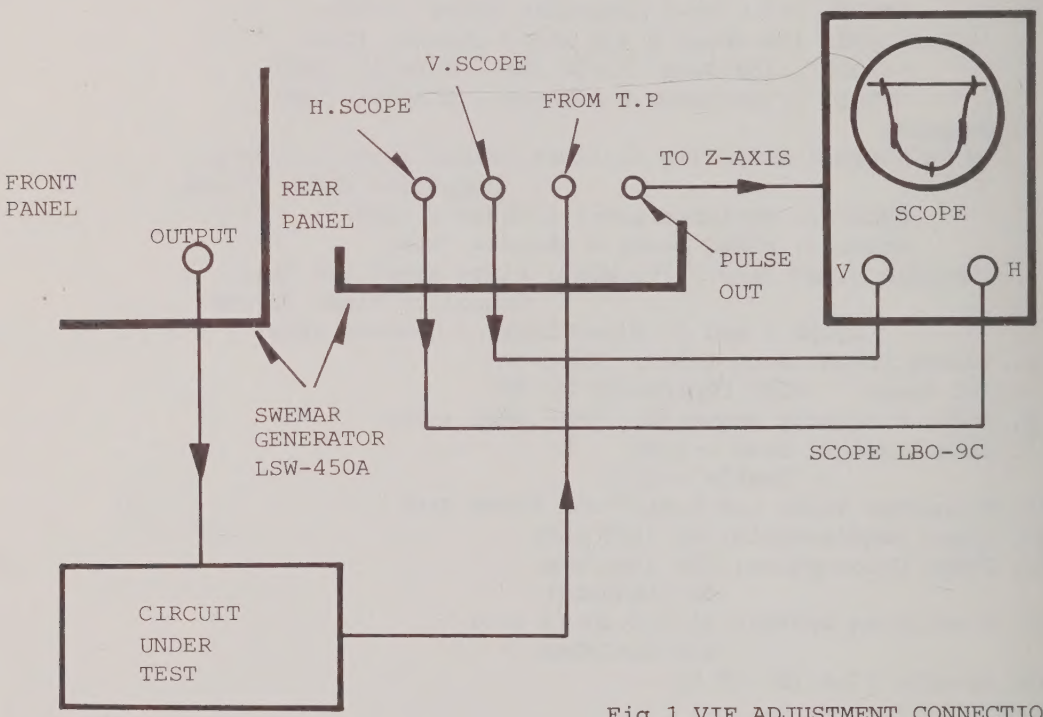


Fig.1 VIF ADJUSTMENT CONNECTION

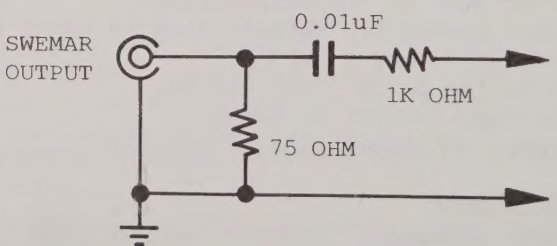


Fig.2 MATCHING PAD

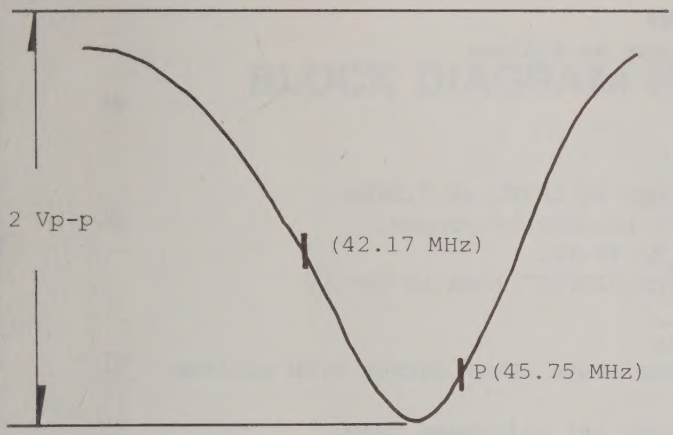


Fig.3 RESPONSE CURVE

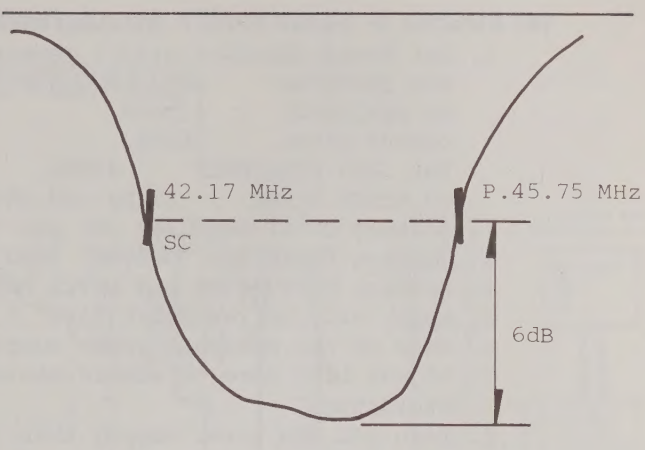


Fig.4 OVERALL-PIF

(2) AFT ADJUSTMENT

PREPARATION:

Same as picture IF adjustment procedure.

1. Connect swemar generator "From T.P" output lead to TP-13.
2. Ture on external power supply.
3. Adjust properly MGC voltage and attenuator of swemar as shown in figure. 5.
4. Adjust L107 to place 45.75 MHz marker at center of S curve.
5. Finally turn off power supply and sweep lead.
6. Recover J50 on the copper side of chassis.

(3) SOUND IF ADJUSTMENT

(A) PREPARATION:

1. Set VR101 (RF AGC) at center position.
2. Connect swemar generator "output" lead to tuner test point T.P. through "matching pad" as shown in figure 2.
3. Apply 12V to the point "12V" and BH.

(B) SOUND IF ADJUSTMENT

1. Connect Swemar generator "From TP" output lead to TP-12.
2. Set the output attenuators of swemar generator at 30dB.
3. Turn on the external power supply.
4. Adjust L103 core to place 45.75 MHz marker at zero reference line on response curve as shown in Figure 6.
5. Turn off the power Supply then take off sweep lead.

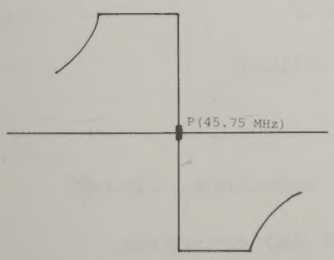


Fig.5 AFT CURVE

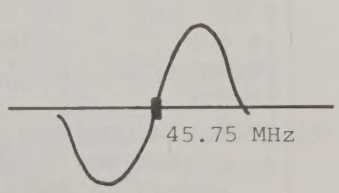


Fig.6 SIF RESPONSE CURVE

(4) SOUND IF SENSITIVITY ADJUSTMENT

1. Set FM-AM standard signal generator as follow:
   MOD SELECTOR INT.
   FM FREQUENCY 4.5MHz.
   OUTPUT LEVEL 100dB.
   INT. MOD FREQUENCY 400Hz.
   FM METER RANGE 25kHz and adjust FM LEVEL at 7.5kHz.
2. Connect TP-11 and C109 (IC pin 5) to chassis ground.
3. Connect FM-AM SSG "OUTPUT" lead to TP-12.
4. Connect DISTORTION and LEVEL METER "INPUT" lead to TP-10.
5. Apply +12V to the point "12V"
6. Turn on the external power supply
7. Adjust L102 core to obtain maximum sound level output with minimum distortion.
8. Turn off the power supply then take off all sweep lead.

(5) SOUND OUTPUT LEVEL ADJUSTMENT

1. Connect TV signal to 601T VHF ANT INPUT.
2. Tune 601T to proper channel, Which have a 1 kHz sound signal.
3. Connect a VTVM to TP-10
4. Adjust VR102 so that the level of TP-10 is 0.6 Vp-p (213 mVrms)
5. Take off any probe.

(6) SYNC. OSCILLATION ADJUSTMENT

1. Connect TP-71 ,to chassis ground.
2. Connect Frequency Counter "INPUT" lead to TP-72.
3. Adjust VR175 obtain frequency indication 15734 +- 30Hz.

(7) RF AGC ADJUSTMUNT

1. Connect TV signal through a 75 ohm to 75 ohm TV ATTENUATOR to 601T VHF ANT INPUT.
2. Tune 601T to proper channel.
3. Adjust the TV ATTENUATOR to obtain 56 dB TV signal input to 601T.
4. Connect a DC VOLTMETER across TUNER AGC point and chassis ground.
5. Adjust VR 101 (RF AGC SET-UP) fully clockwise to its end position and read the VOLTAGE indication "A".
6. Slightly adjust VR101 counter-clockwise to obtain the VOLTAGE indication at A-0.1V

(8) SOUND DECODER ADJUSTMENT

PREPARATION:
Signal set up:
V MAIN (L+R) signal : 300Hz 212 mVrms(0.6 Vp-p)
V SUB (L-R) signal : 400Hz, 100% modulation
carrier: 31.468kHz 1.2Vp-p
V SAP signal: 400 Hz, 100% modulation 0.3Vp-p
(+-10kHz deviation) carrier:78.671kHz.
STEREO PILOT signal: 15.734 kHz 0.12 Vp-p.

(A) STEREO DECODER VCO ADJUSTMENT

1. Connect the frequency counter (high input impedance, Cin $\ll$ 1000pF) to TP-51.
2. Receives a no MPX signal input at pin 1 of 3SO connector.
3. Set 601T to the STEREO mode. (open the pin 1 of 3SO connector)
4. Adjust VR 531 (fh Vco), so that the frequency of TP-51 is 15734 +- 50Hz.

(B) SAP DECODER VCO ADJSUTMENT

1. Connect the frequency counter (high input impedance cin ≪ 1000pF) to TP-61.
2. Adjust VR611 (5fH Vco) to 78.67 kHz +-300Hz

(C) (L+R) GAIN ADJUSTMENT

1. Supply a V MAIN signal to pin 1 of 3SO ocnnector.
2. Set 601T to the STEREO mode.
3. Connect the VTVM to TP-63.
4. Adjust VR 511 (L+R GAIN) so that the level of TP-63 is 350 +-3mVrms.

(D) (L-R) GAIN ADJUSTMENT

1. Receives a composite signal (SUB signal and STEREO PILOT signal) from a MTS ENCODER to pin 1 of 3SO connector
2. Set the MTS ENCODER SWITCH as shown:
   Noise reduction.....off
   SUB.....on
   Stereo Pilot.....on
   SAP.....on or off
3. Set 601T to ST mode.
4. Connect a VTVM to TP52
5. Adjust VR 521 (L-R GAIN), so that the level of TP-52 is 200 +-2mVrms

(E) SAP GAIN ADJUSTMENT

1. Receives a SAP signal from a MTS ENCODER to pin 1 of 3SO connector.
2. Set the MTS ENCODER switch as shown:
   Noise reduction.....off
   SAP.....on
   SUB.....on or off
   Stereo Pilot.....on or off
3. Set 601T to SAP mode.
4. Connect a VTVM to TP-52
5. Adjust VR612 (SAP GAIN) so that the level of TP-52 is 200 +-2m Vrms.

(F) DBX TIMING ADJUSTMETN

1. Supply a SUB signal to Pin 1 of 3SO connector.
2. Set 601T to ST mode.
3. Connect a VTVM between TP-53 and TP-54
4. Adjust VR 581 (TIME ADJ), so that the DC level of VTVM is 15.0 +-0.3mVdc.

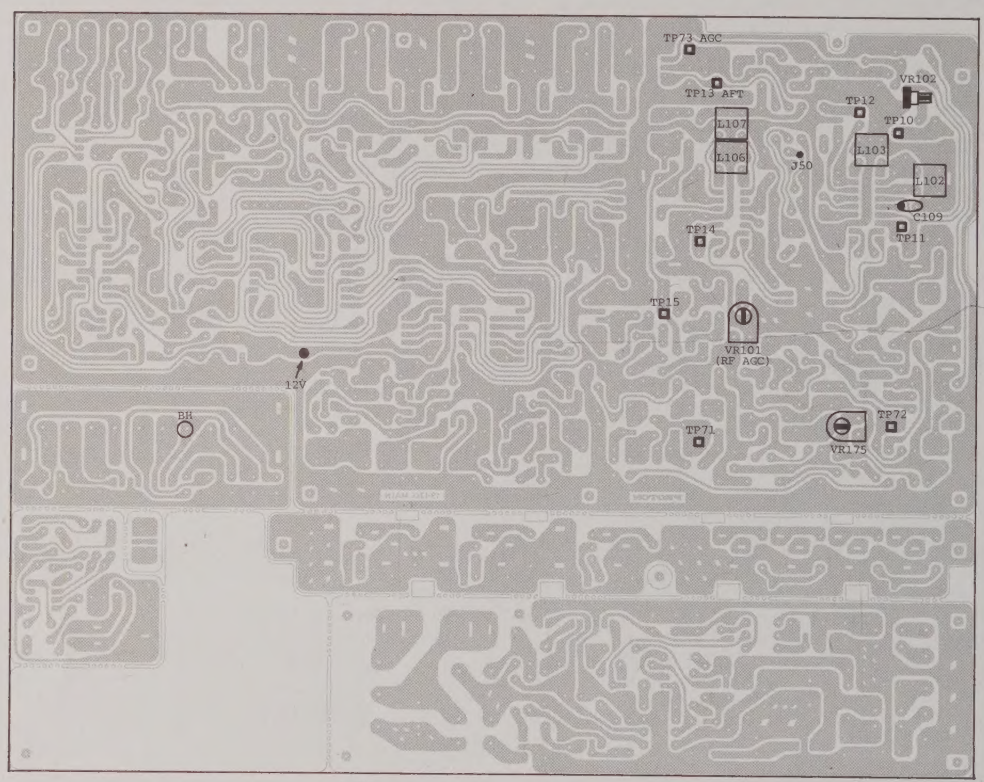
(G) SEPARATION ADJUSTMENT

1. Supply a SUB signal to pin 1 of 3SO connector.
2. Set 601T to ST mode.
3. Connect a VTVM to TP-62.
4. Adjust VR 591 (SEPA) so that the level of TP-62 is 350 mVrms +- +- 3 mVrms.

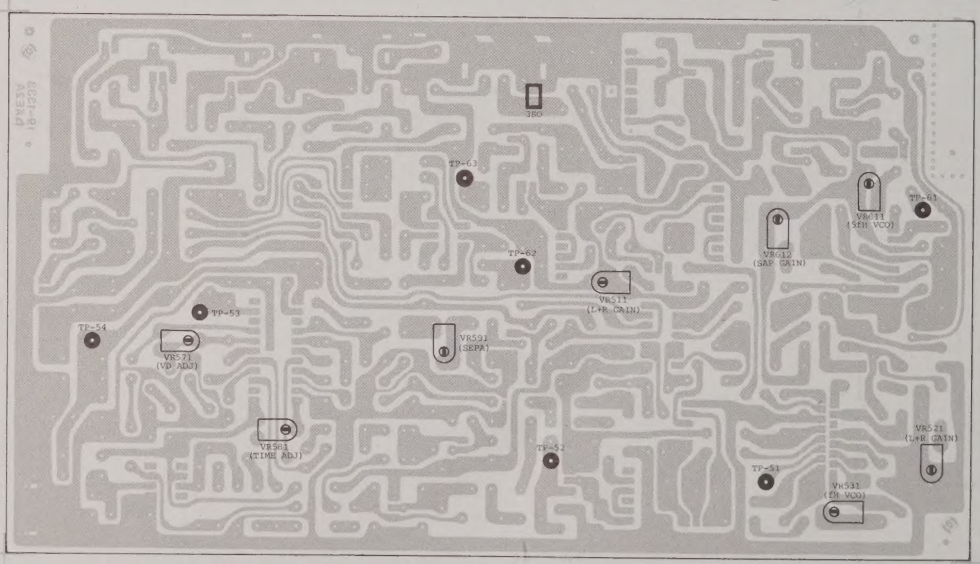
(H) VD ADJUSTMENT

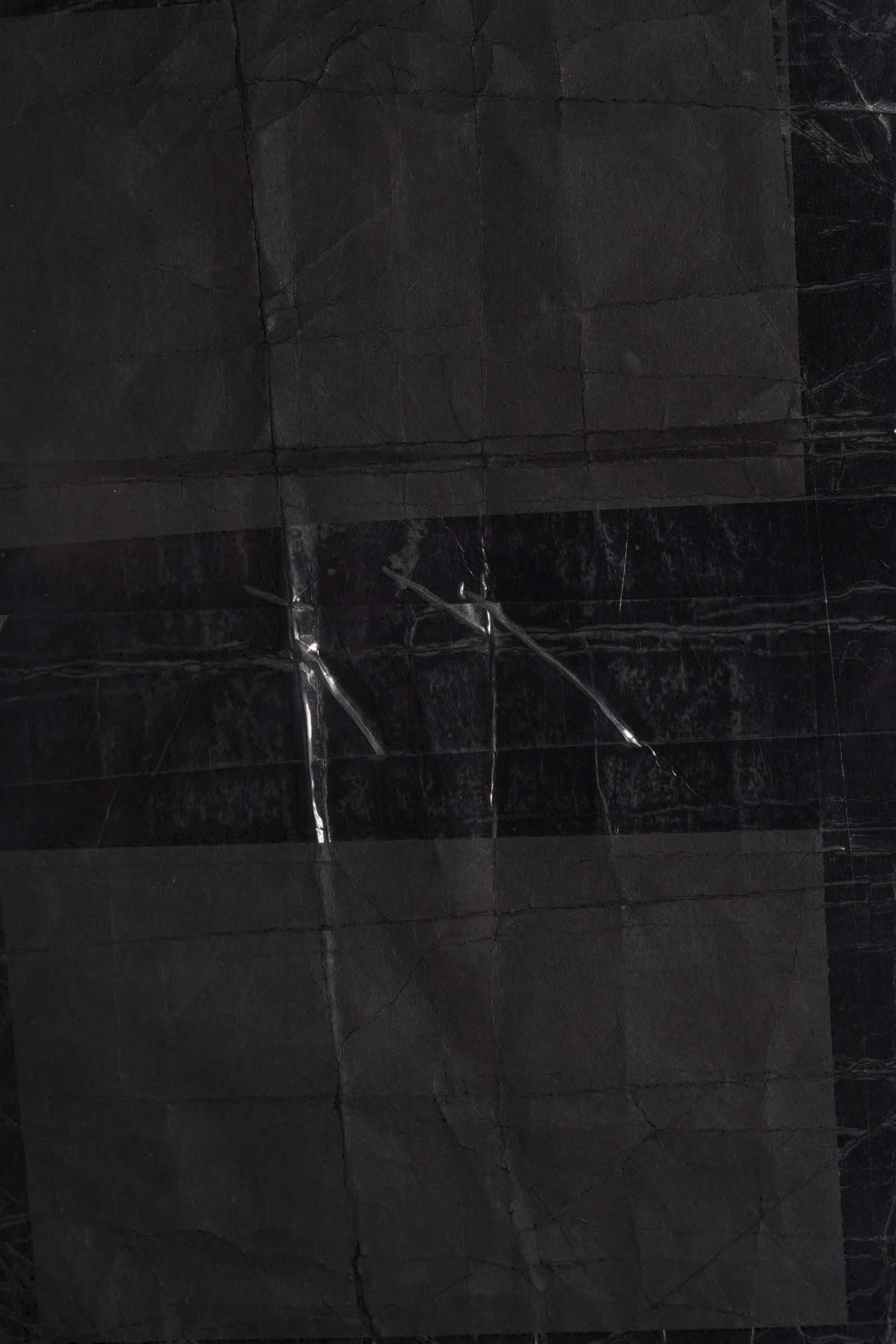
1. Supply 8 kHz 106.2 mVrms(-17.2dB) to pin 1 of 3SO connector.
2. Set 601T to ST mode.
3. Connect a VTVM to TP-63 and read the VOLTAGE indication "X".
4. Connect a VTVM to TP-62 and Adjust VR 571 (V.D.) so that the meter indicate X+-0.3mV.

MAIN PCB ADJUSTMENT DIAGRAM (TOP VIEW)

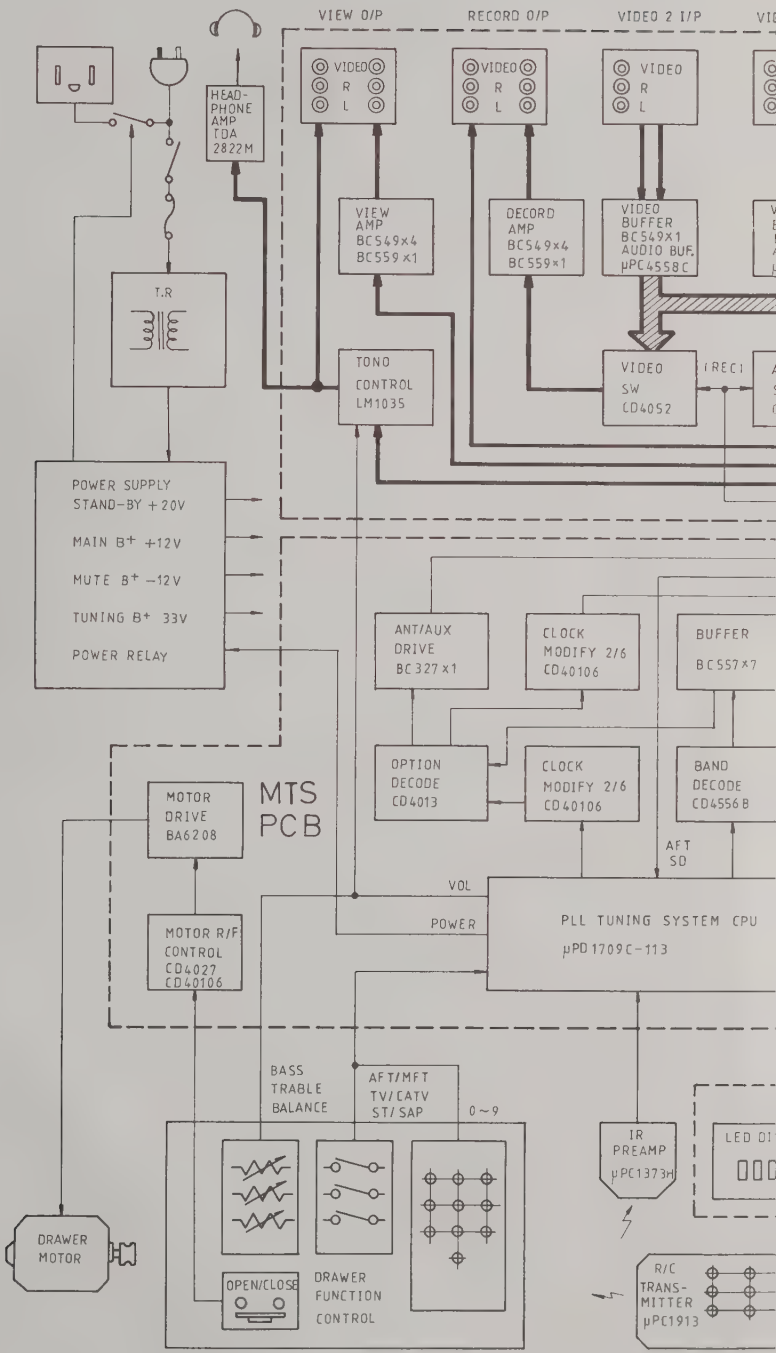


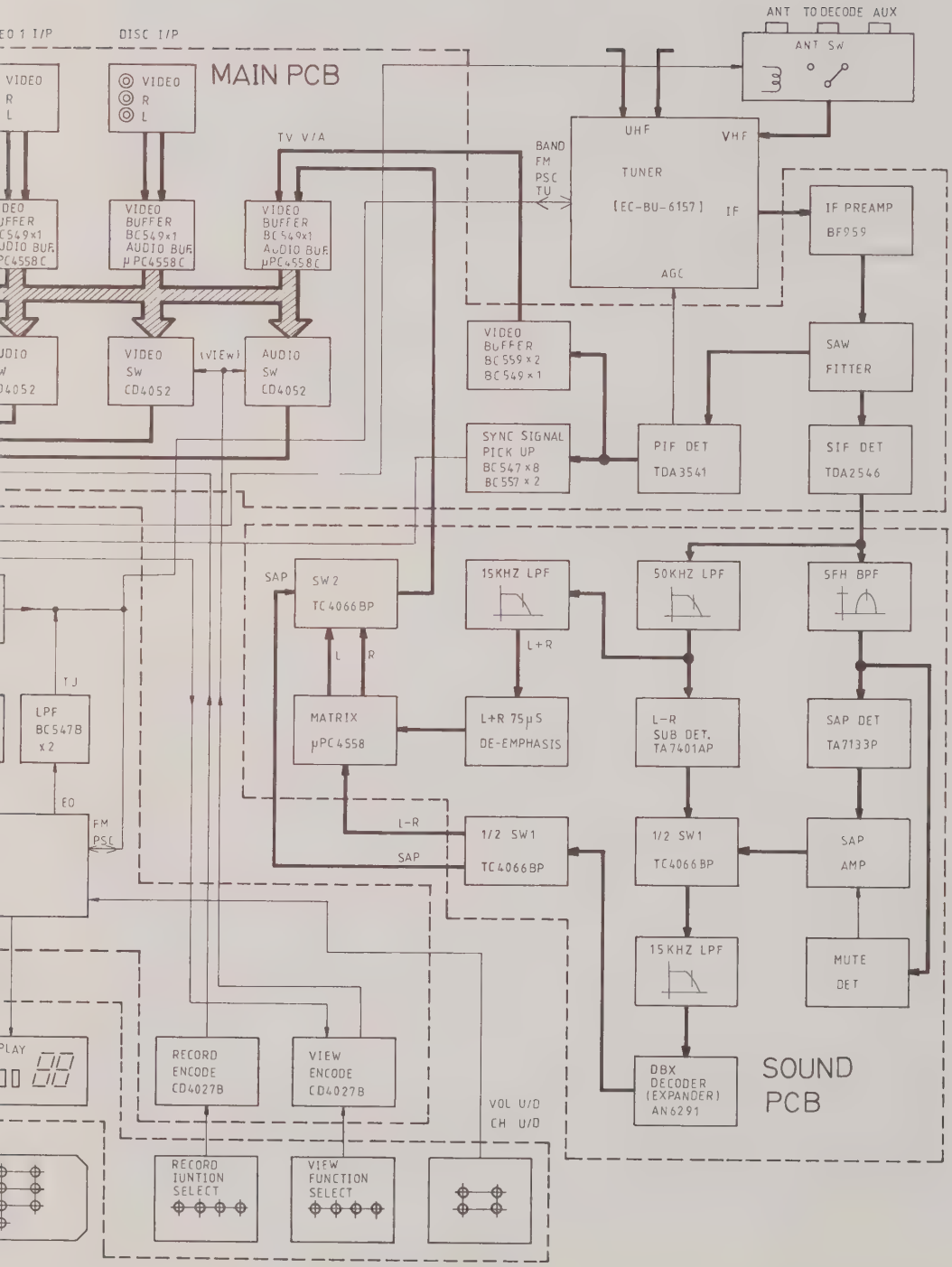
SOUND PCB ADJUSTMENT DIAGRAM (TOP VIEW)



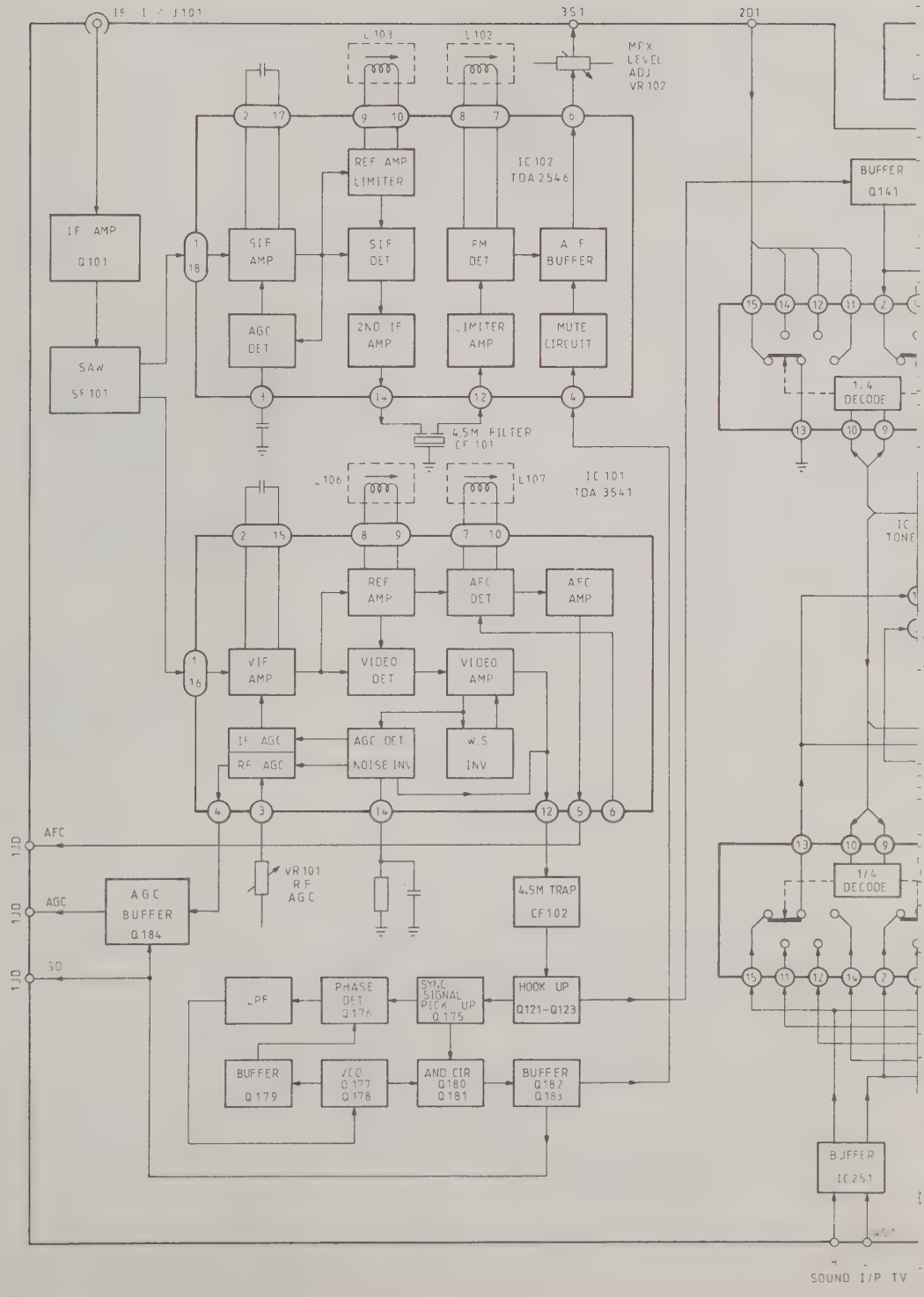


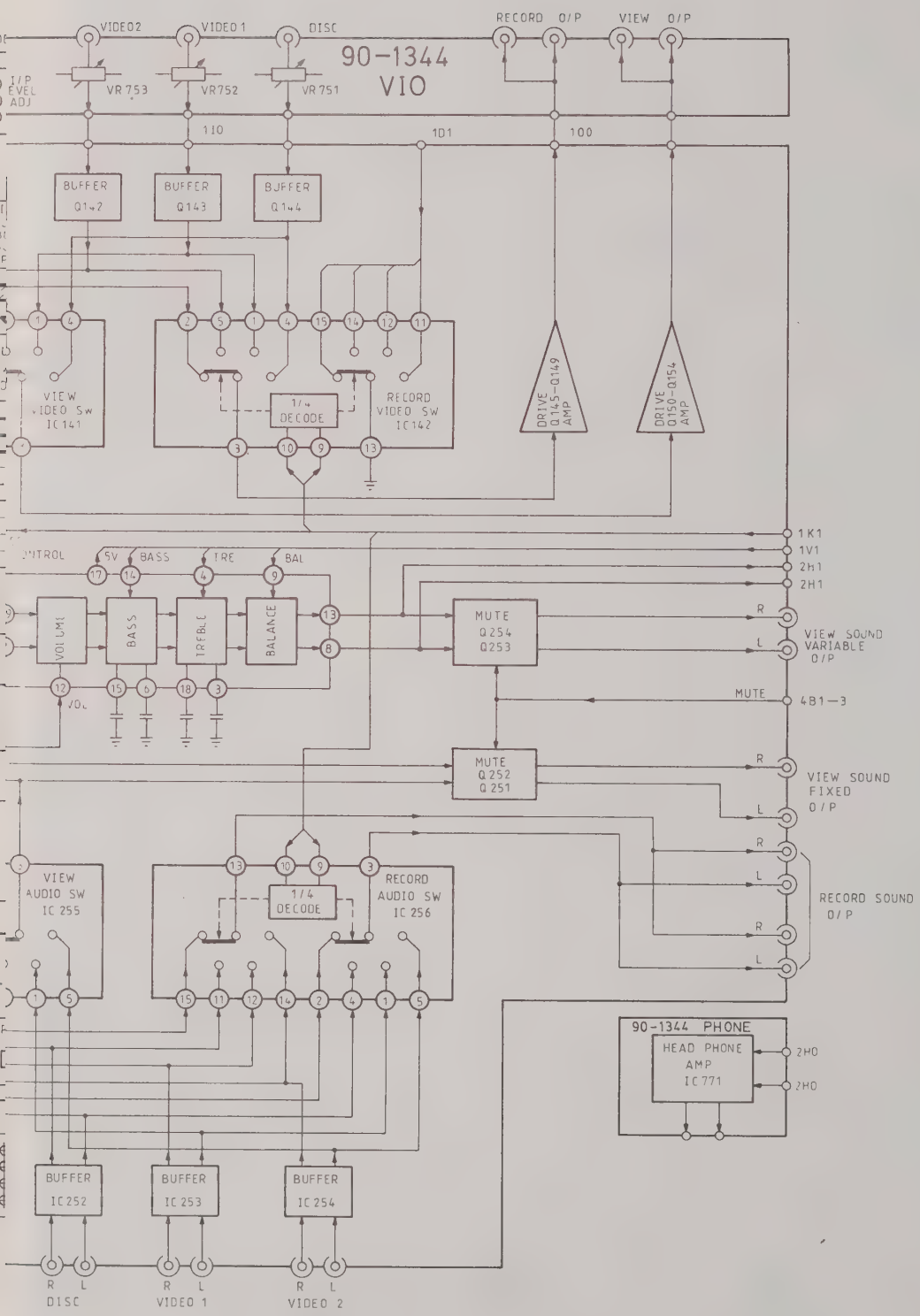
BLOCK DIAGRAM (OVERALL)

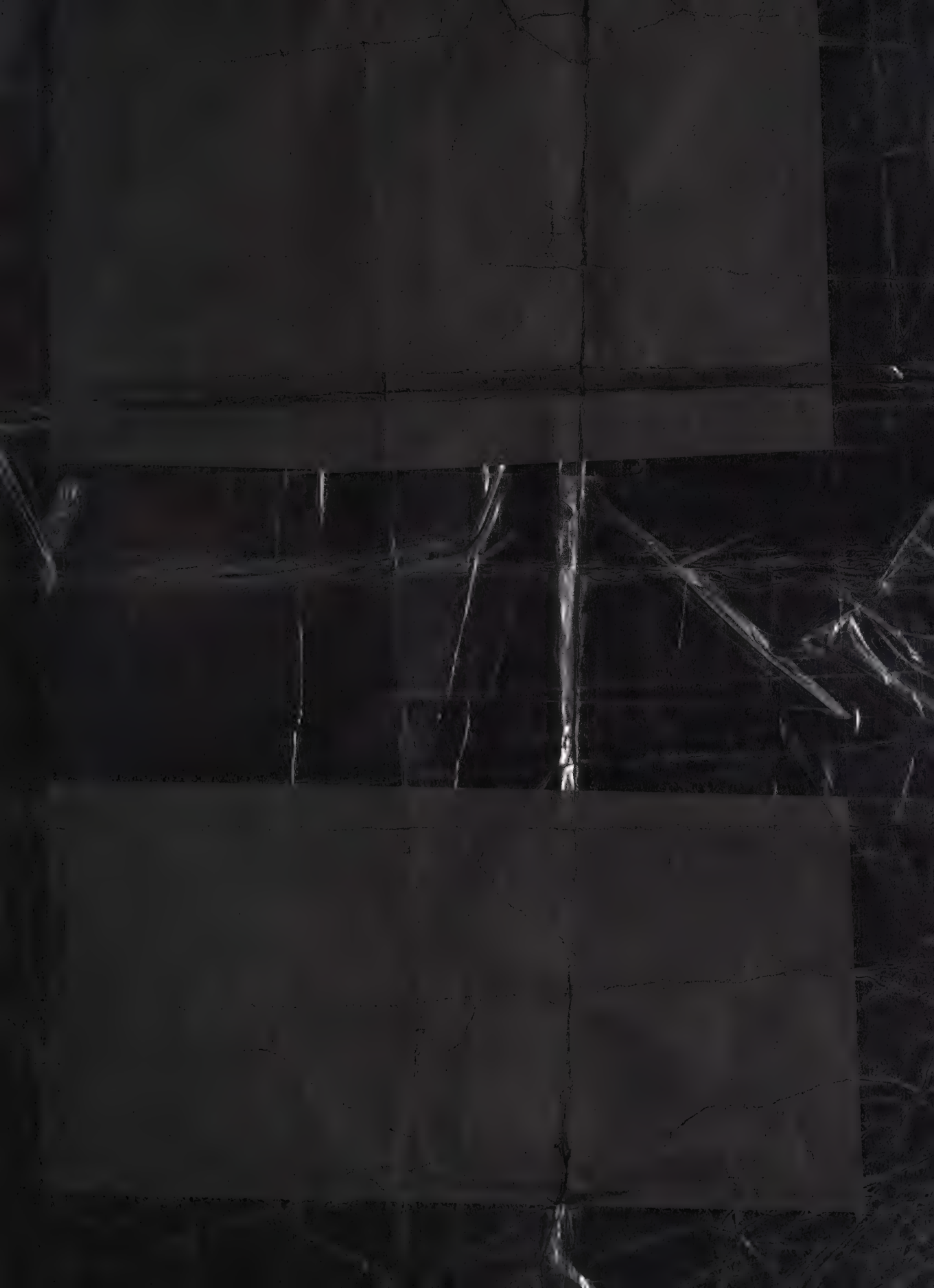


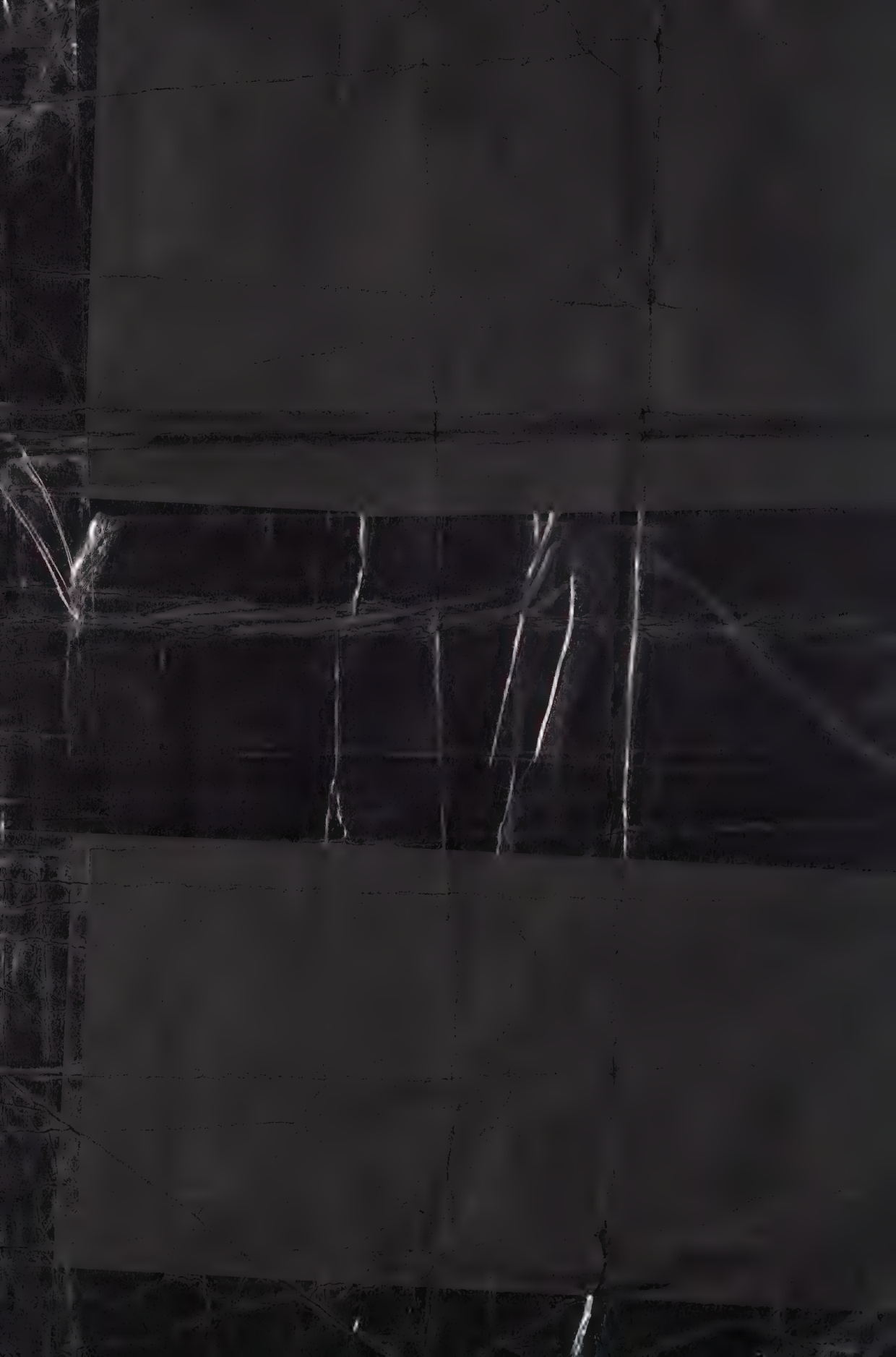

ANT TO DECODE AUX
ANT SW
DISC I/P
MAIN PCB
VIDEO
R
L
VIDEO
R
L
TV V/A
BAND
FM
PSC
TU
UHF
VHF
TUNER
(EC-BU-6157)
IF
AGC
IF PREAMP
BF959
VIDEO BUFFER BC549×1 AUDIO BUF. μPC4558C
VIDEO BUFFER BC549×1 AUDIO BUF. μPC4558C
VIDEO BUFFER BC549×1 AUDIO BUF. μPC4558C
VIDEO SW CD4052
(VIEW)
AUDIO SW CD4052
VIDEO BUFFER BC559×2 BC549×1
SAW FITTER
SYNC SIGNAL PICK UP BC547×8 BC557×2
PIF DET TDA3541
SIF DET TDA2546
SAP
SW2 TC4066BP
15KHZ LPF
50KHZ LPF
SFH BPF
L
R
L+R
MATRIX μPC4558
L+R 75μS DE-EMPHASIS
L-R SUB DET. TA7401AP
SAP DET TA7133P
TJ
LPF BC547B ×2
EO
FM PSC
L-R
SAP
1/2 SW1 TC4066BP
1/2 SW1 TC4066BP
SAP AMP
15KHZ LPF
MUTE DET
DBX DECODER (EXPANDER) AN6291
SOUND PCB
RECORD ENCODE CD4027B
VIEW ENCODE CD4027B
VOL U/D
CH U/D
RECORD IUNTION SELECT
VIEW FUNCTION SELECT

BLOCK DIAGRAM (MAIN SIGNAL)

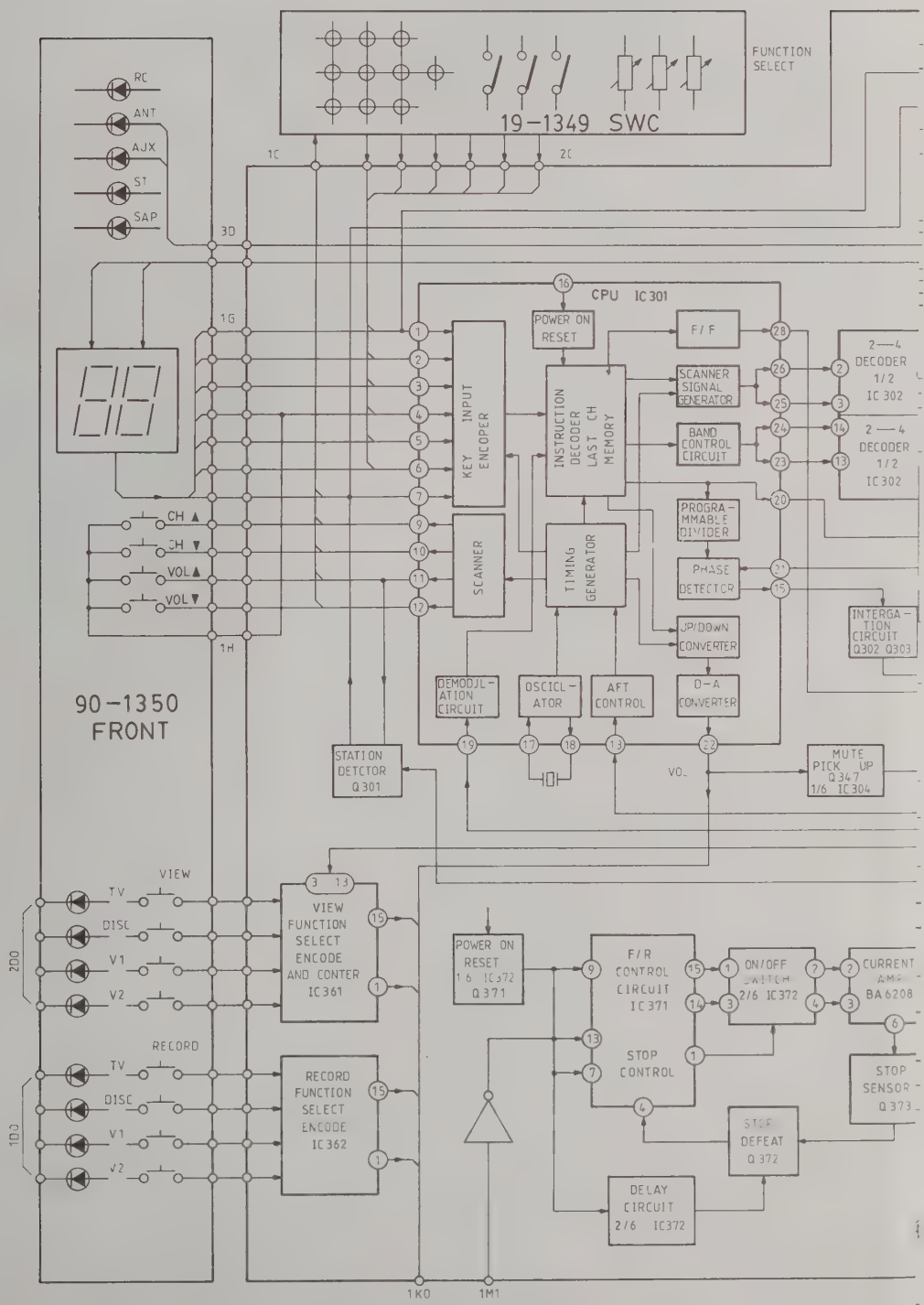


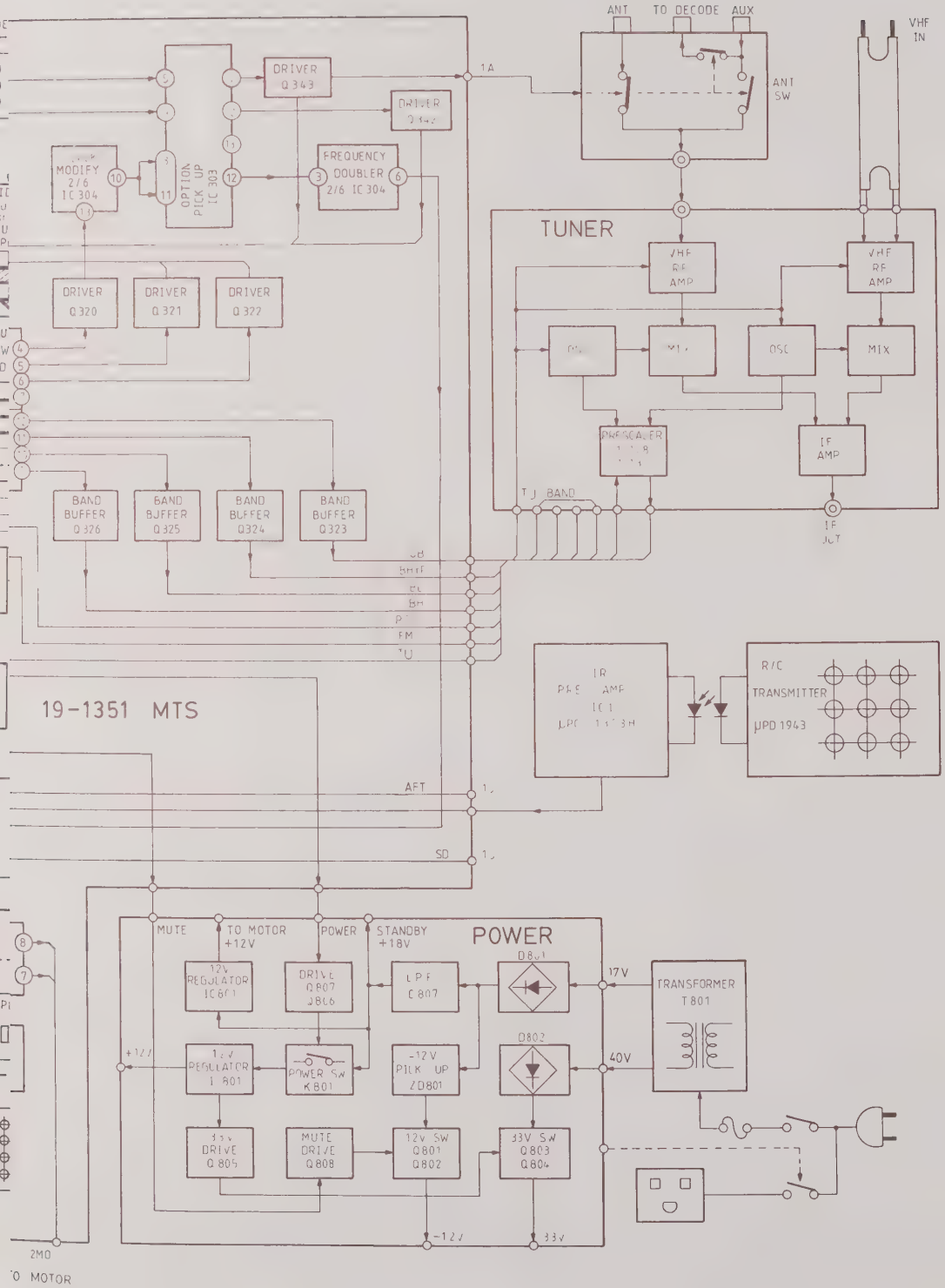

90-1344
VIO
VIDEO2
VIDEO 1
DISC
RECORD O/P
VIEW O/P
I/P LEVEL ADJ
VR753
VR752
VR751
110
101
100
BUFFER Q142
BUFFER Q143
BUFFER Q144
VIEW VIDEO SW IC141
1/4 DECODE
RECORD VIDEO SW IC142
DRIVE Q145-Q149 AMP
DRIVE Q150-Q154 AMP
1K1
1V1
2H1
2H1
CONTROL
5V
BASS
TRE
BAL
VOLUME
BASS
TREBLE
BALANCE
MUTE Q254 Q253
VIEW SOUND VARIABLE O/P
MUTE
4B1-3
MUTE Q252 Q251
VIEW SOUND FIXED O/P
VIEW AUDIO SW IC 255
1/4 DECODE
RECORD AUDIO SW IC 256
RECORD SOUND O/P
90-1344 PHONE
HEAD PHONE AMP IC 771
2H0
2H0
BUFFER IC252
BUFFER IC 253
BUFFER IC 254
R L
DISC
R L
VIDEO 1
R L
VIDEO 2



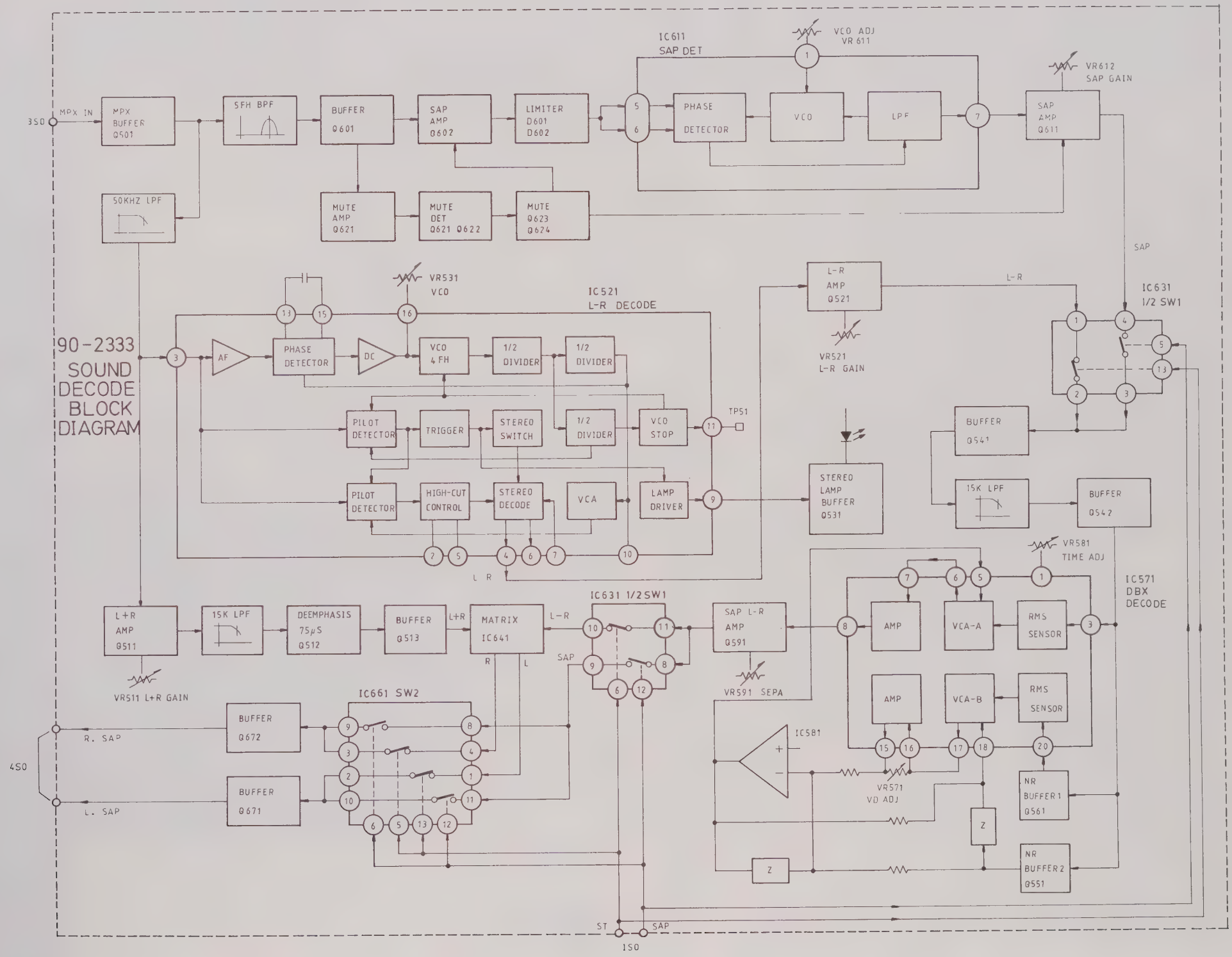


CIRCUIT DIAGRAM (TUNING SYSTEM)

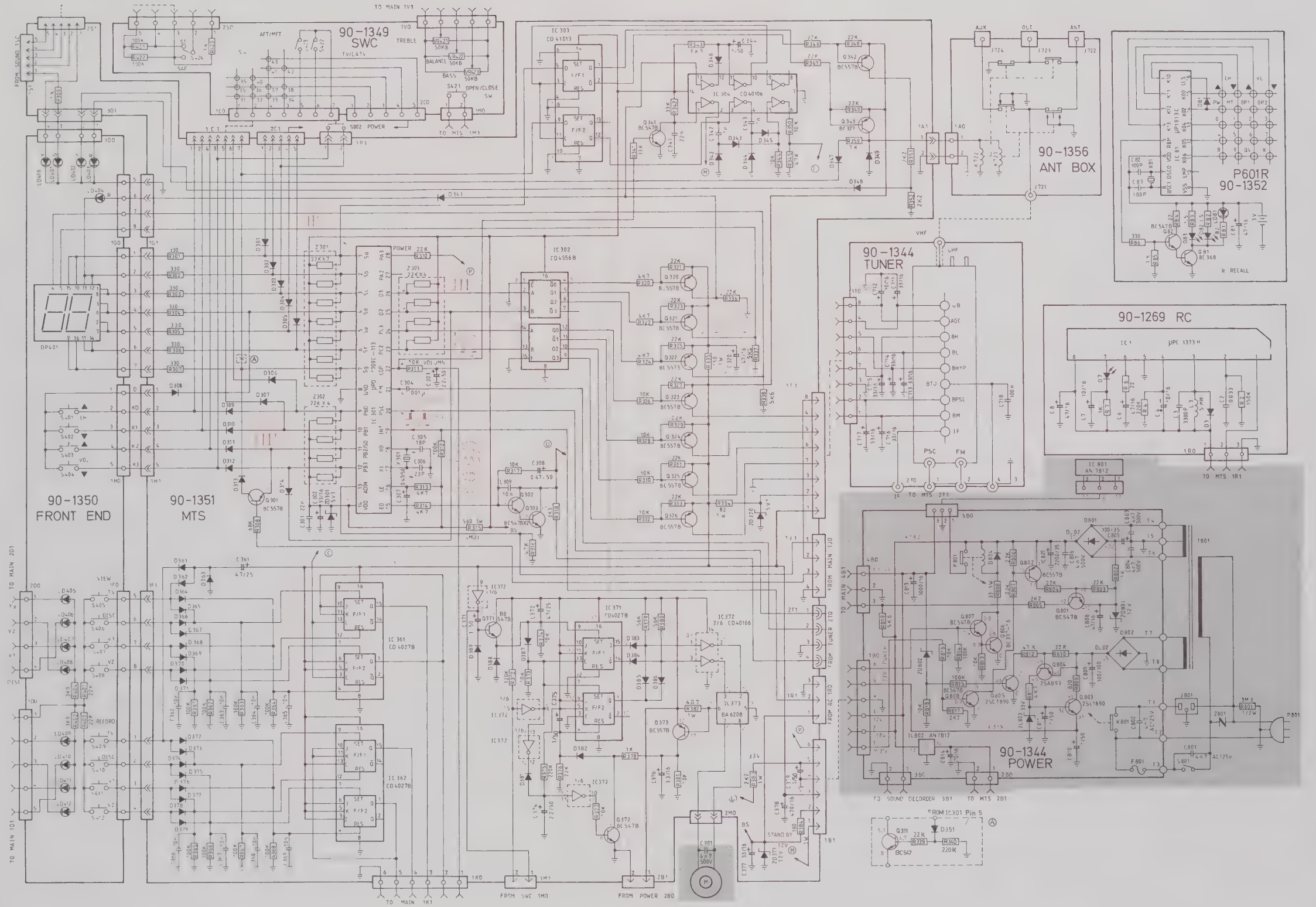



ANT
TO DECODE
AUX
VHF IN
ANT SW
DRIVER Q343
DRIVER Q342
1A
MODIFY 2/6 IC304
OPTION PICK UP IC303
FREQUENCY DOUBLER 2/6 IC304
DRIVER Q320
DRIVER Q321
DRIVER Q322
TUNER
VHF RF AMP
VHF RF AMP
OSC
MIX
PRESCALER
IF AMP
IF OUT
T.J BAND
BAND BUFFER Q326
BAND BUFFER Q325
BAND BUFFER Q324
BAND BUFFER Q323
FM
IR PRE AMP IC1
R/C TRANSMITTER
μPD1943
19-1351 MTS
AFT
SD
MUTE
TO MOTOR +12V
POWER
STANDBY +18V
POWER
12V REGULATOR IC801
DRIVE Q807 JB16
LPF L807
D801
17V
TRANSFORMER T801
D802
40V
12V REGULATOR I 801
POWER SW KB01
-12V PULL UP ZD801
33V DRIVE Q805
MUTE DRIVE Q808
12V SW Q801 Q802
33V SW Q803 Q804
-12V
33V
2MO
TO MOTOR

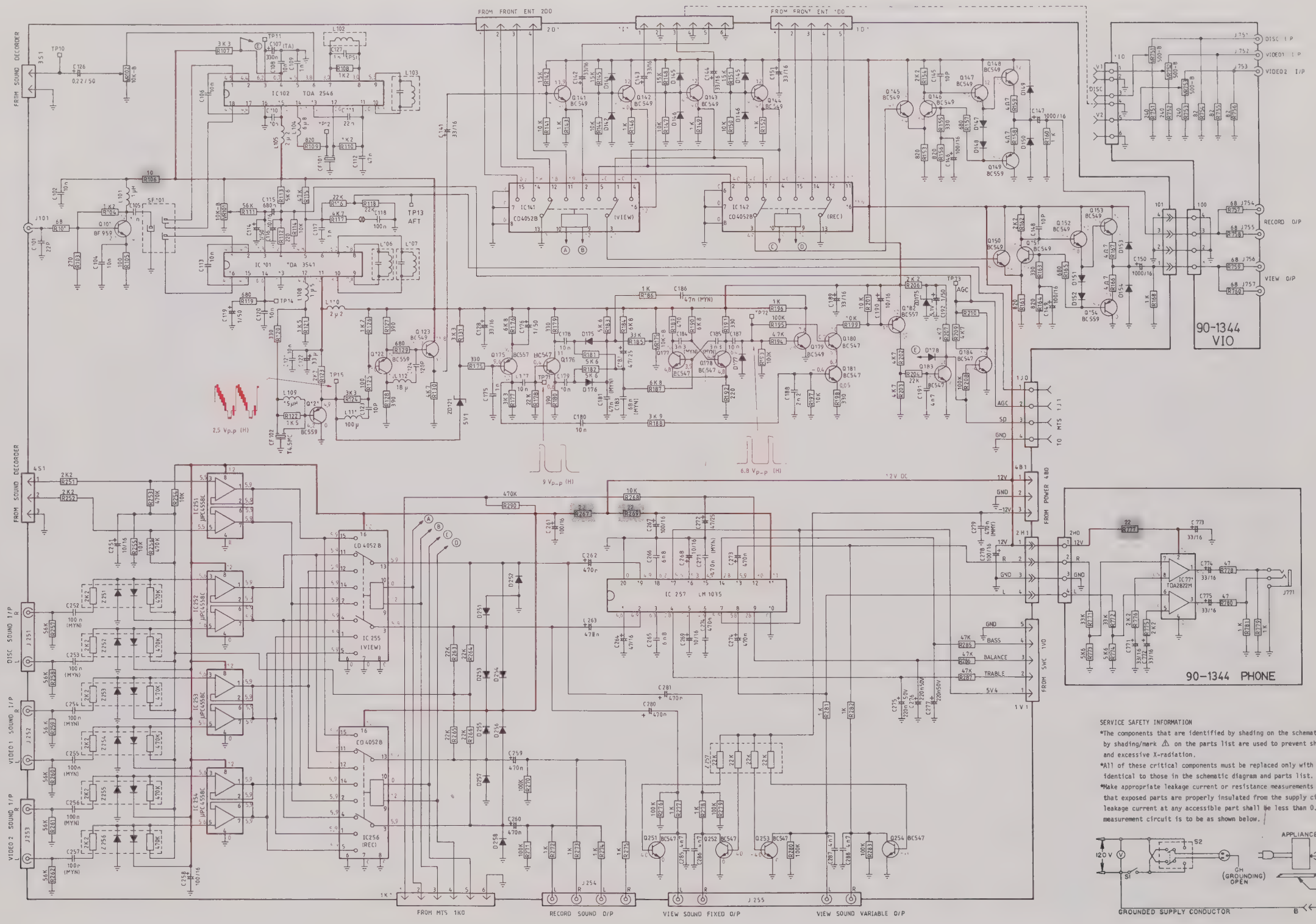
BLOCK DIAGRAM (SOUND DECODE)



CIRCUIT DIAGRAM (TUNING SYSTEM)



CIRCUIT DIAGRAM (MAIN SIGNAL)

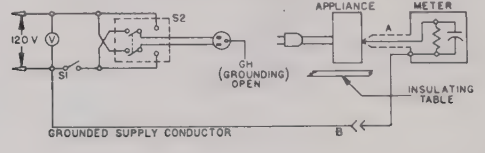


SERVICE SAFETY INFORMATION

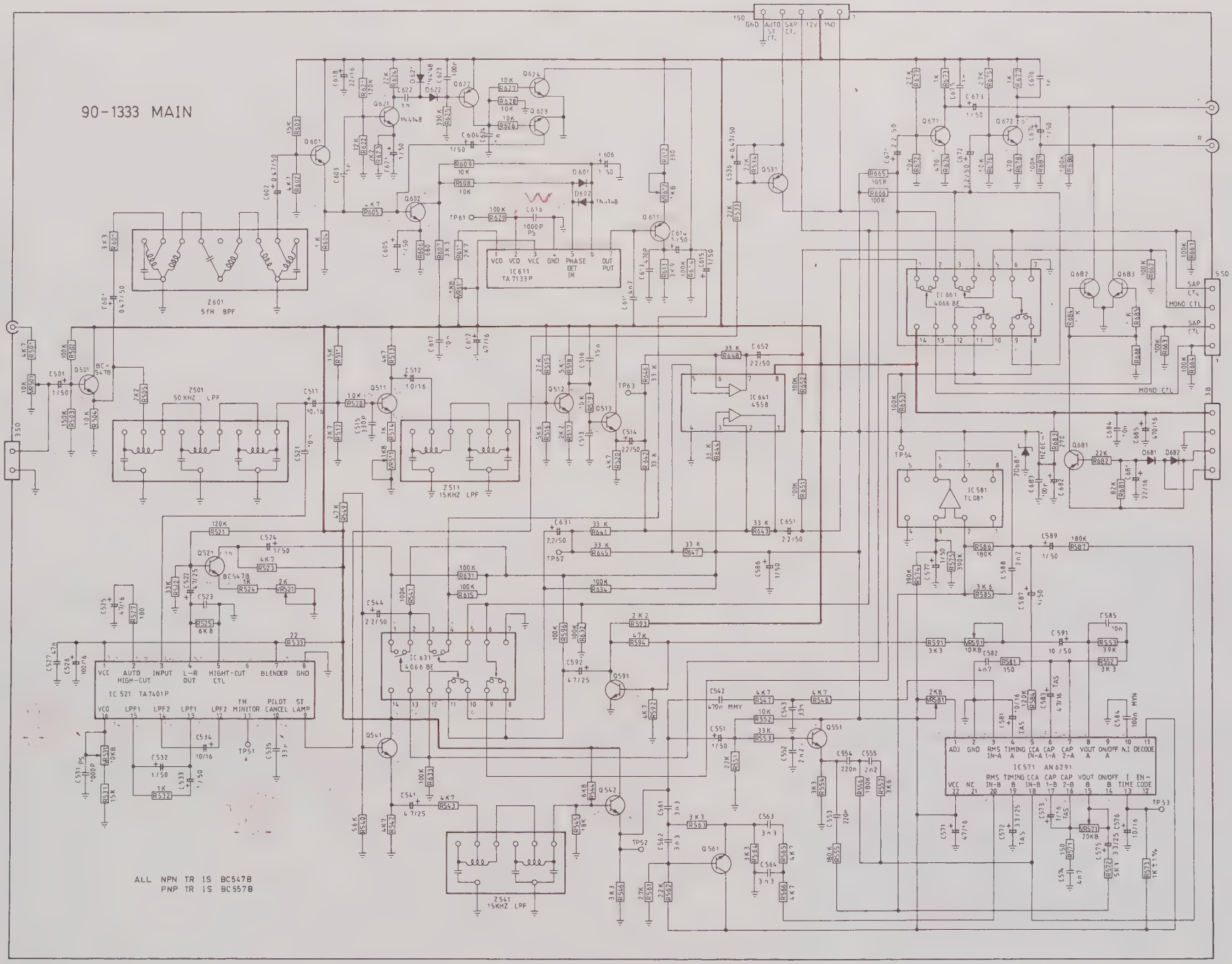
*The components that are identified by shading on the schematic diagram and by shading/mark ⚠ on the parts list are used to prevent shock, fire hazard and excessive X-radiation.

*All of these critical components must be replaced only with the same type identical to those in the schematic diagram and parts list.

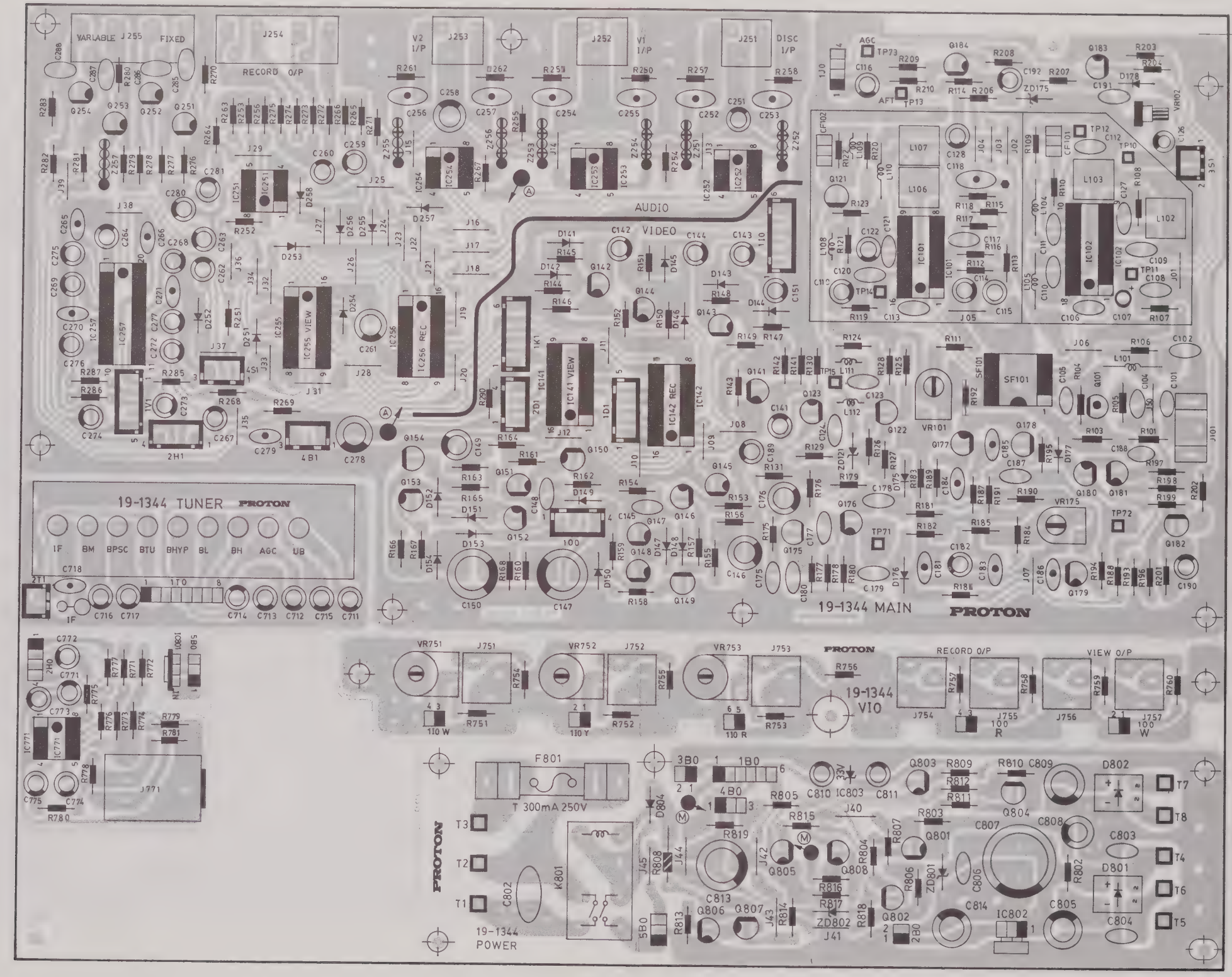
*Make appropriate leakage current or resistance measurements to determine that exposed parts are properly insulated from the supply circuit, the leakage current at any accessible part shall be less than 0.5mA, and the measurement circuit is to be as shown below.



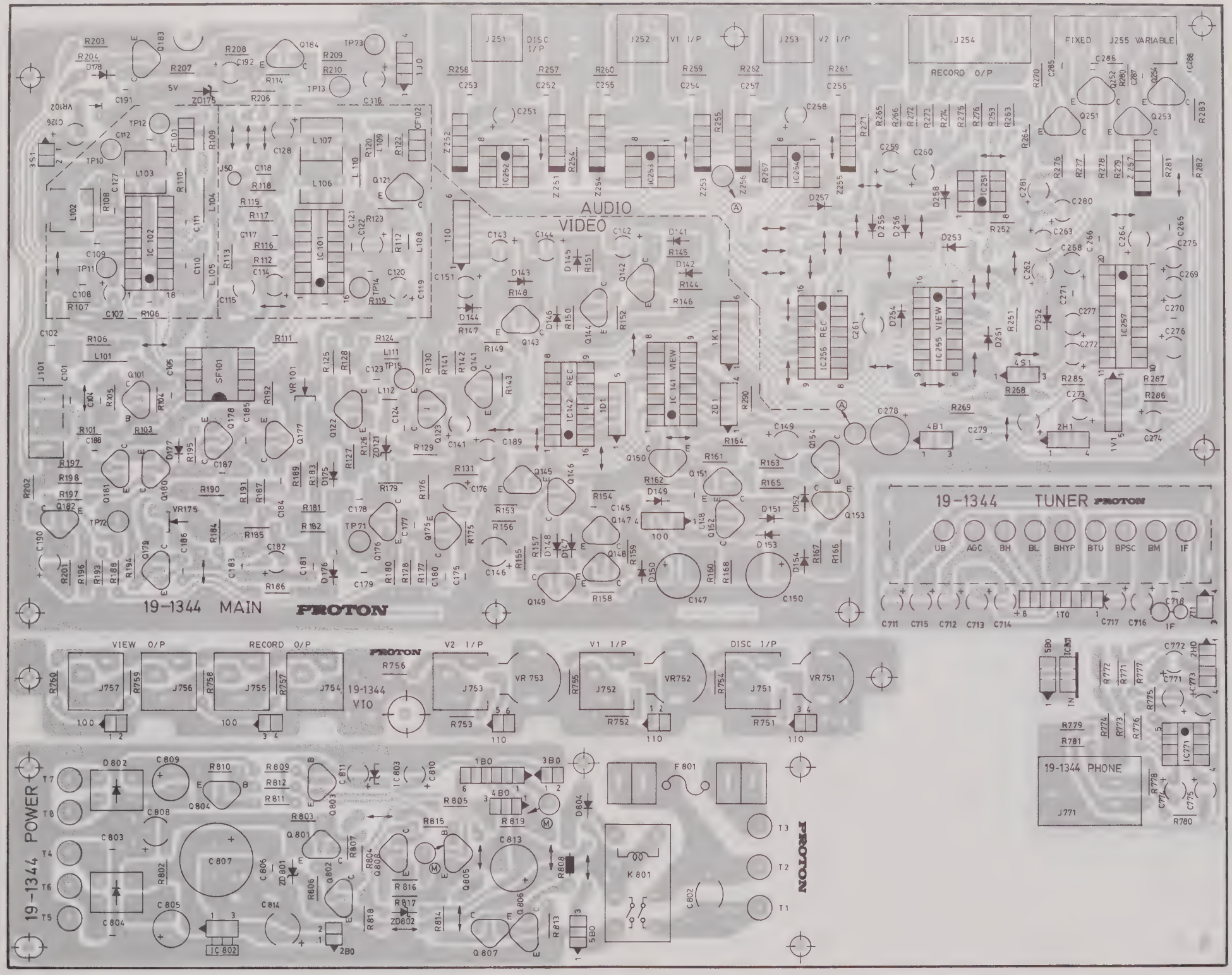
CIRCUIT DIAGRAM (SOUND DECODE)



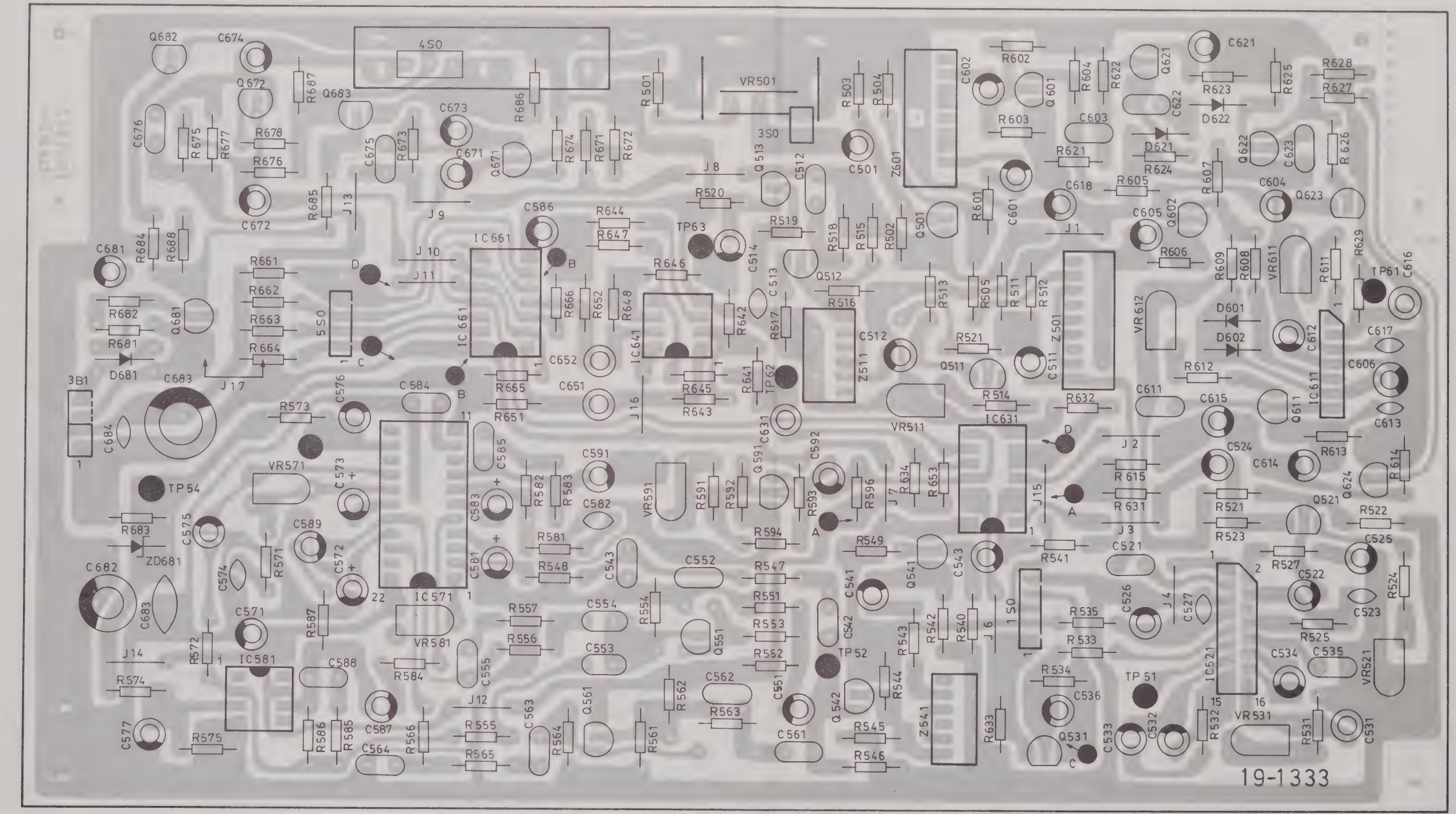
PCB PARTS LOCATION (TOP VIEW)



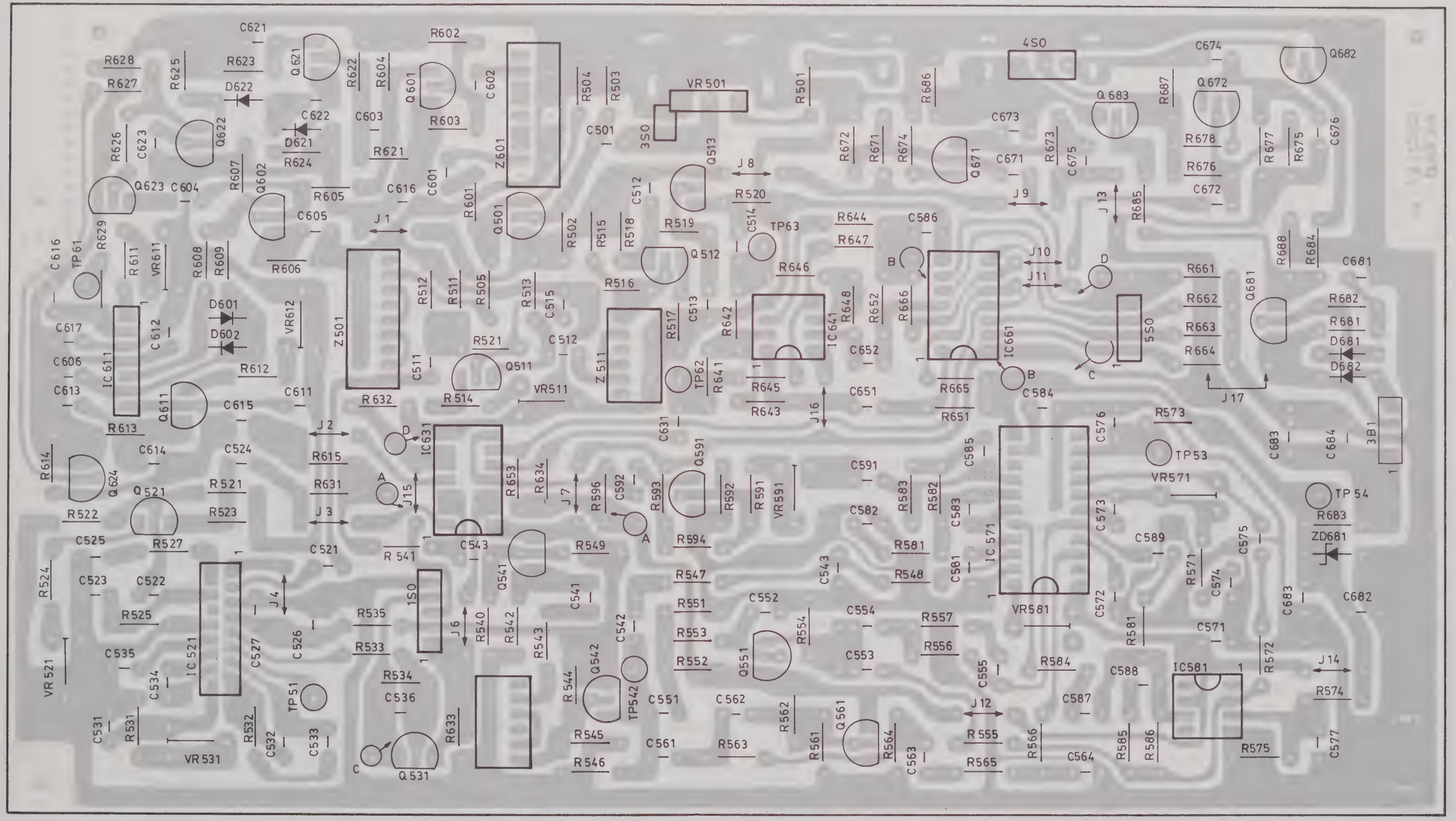
PCB PARTS LOCATION (BOTTOM VIEW)



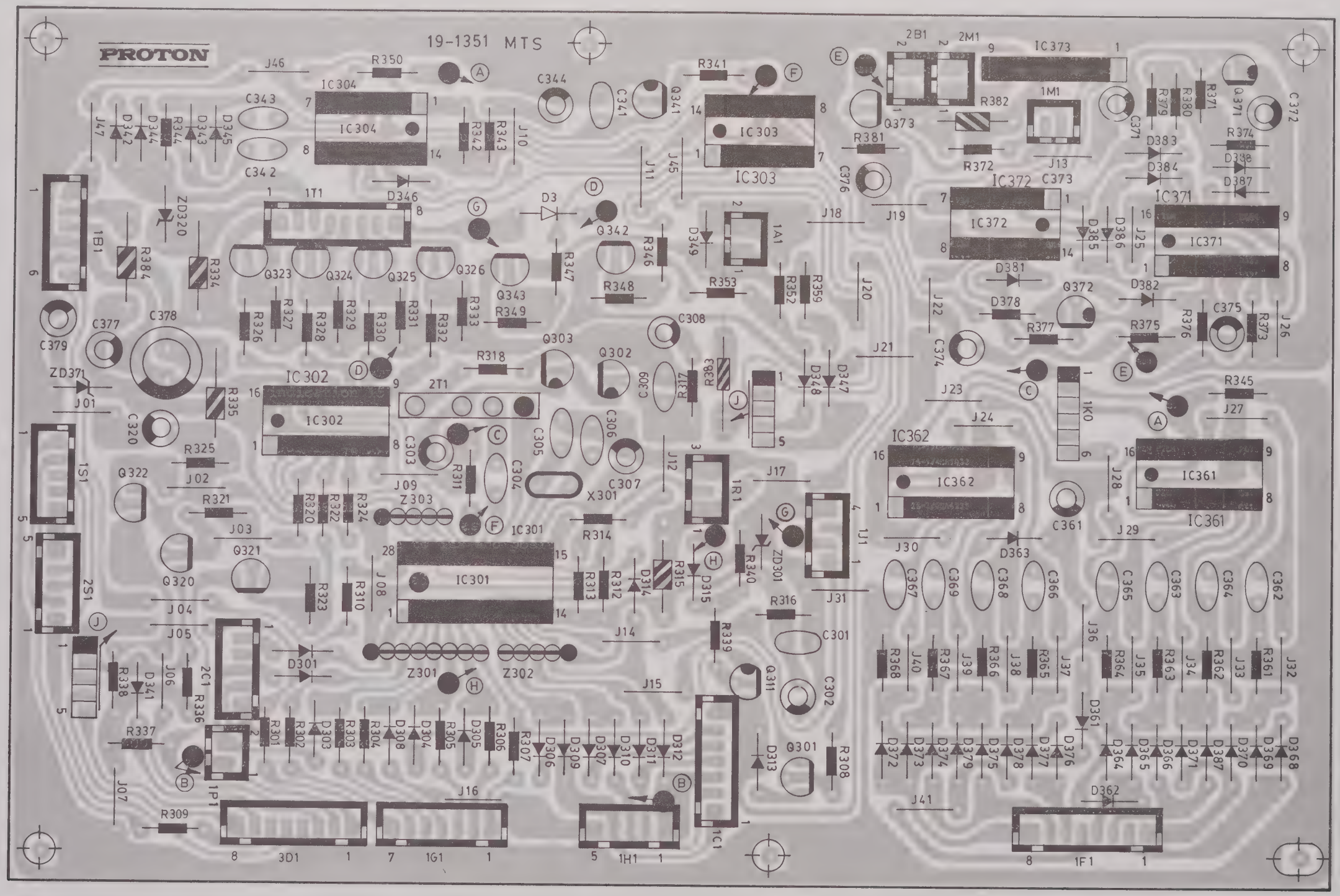
PCB PARTS LOCATION (TOP VIEW)



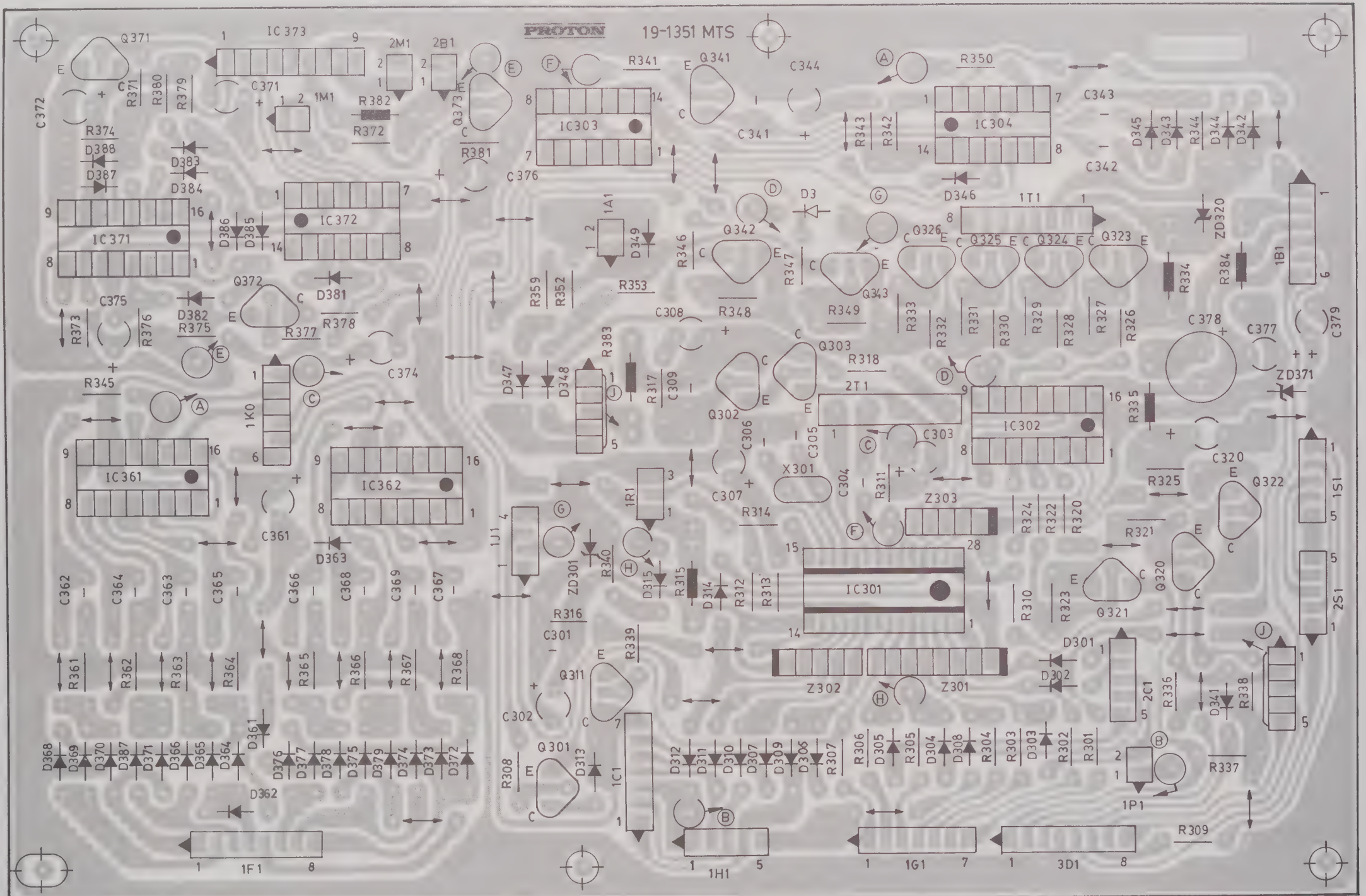
PCB PARTS LOCATION (BOTTOM VIEW)



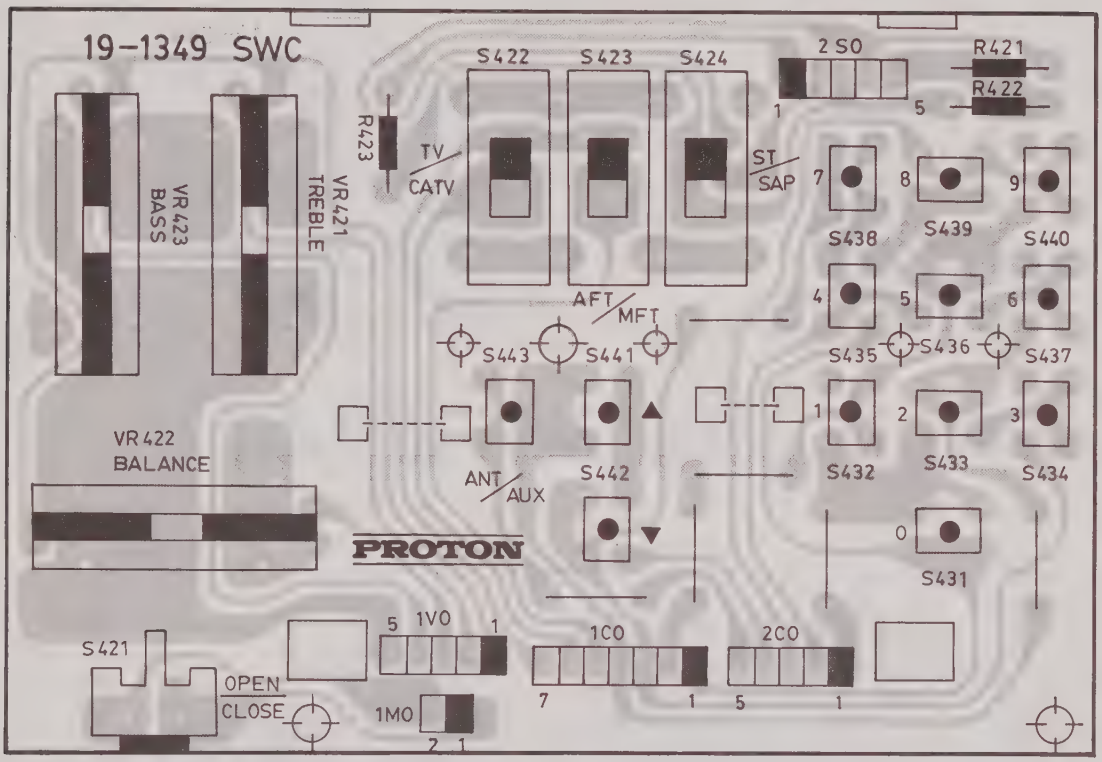
PCB PARTS LOCATION (TOP VIEW)



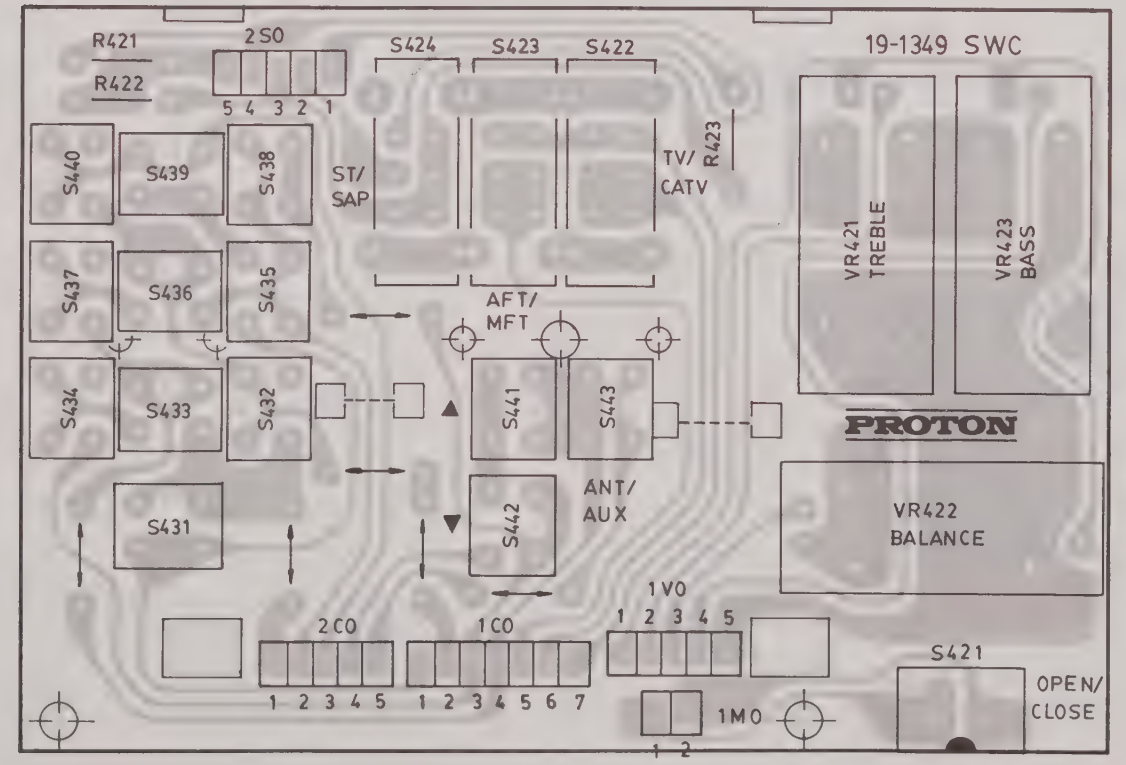
PCB PARTS LOCATION (BOTTOM VIEW)



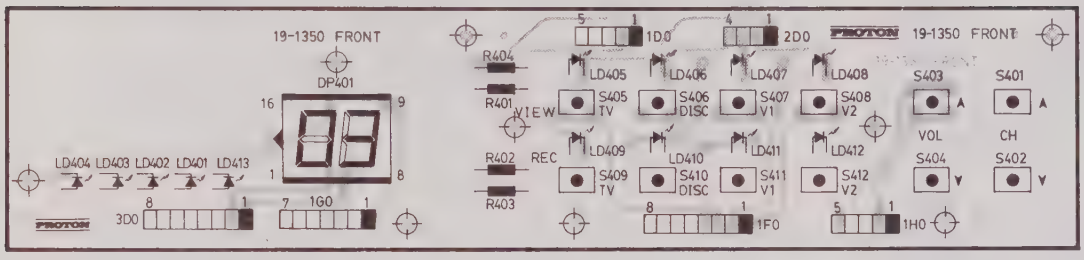
PCB PARTS LOCATION (TOP VIEW)



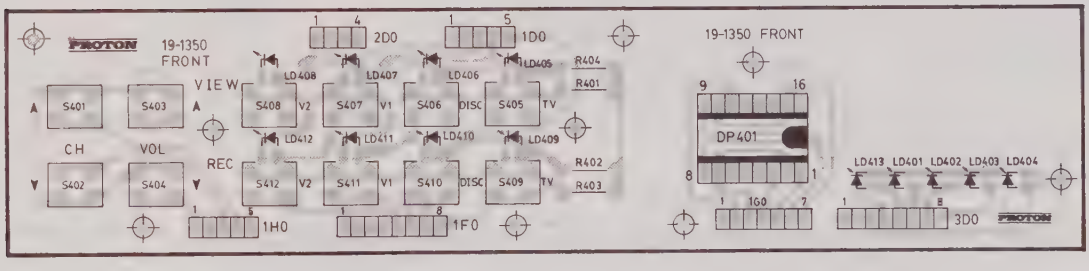
PCB PARTS LOCATION (BOTTOM VIEW)



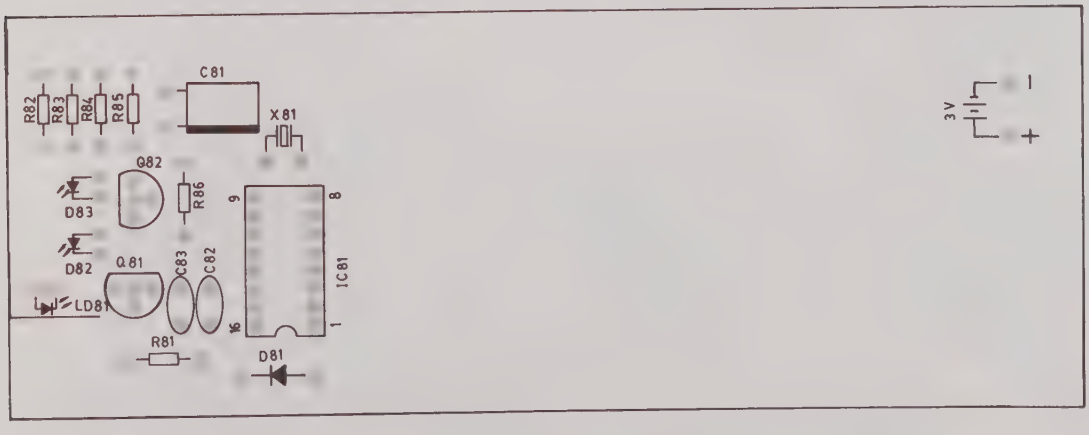
PCB PARTS LOCATION (TOP VIEW)



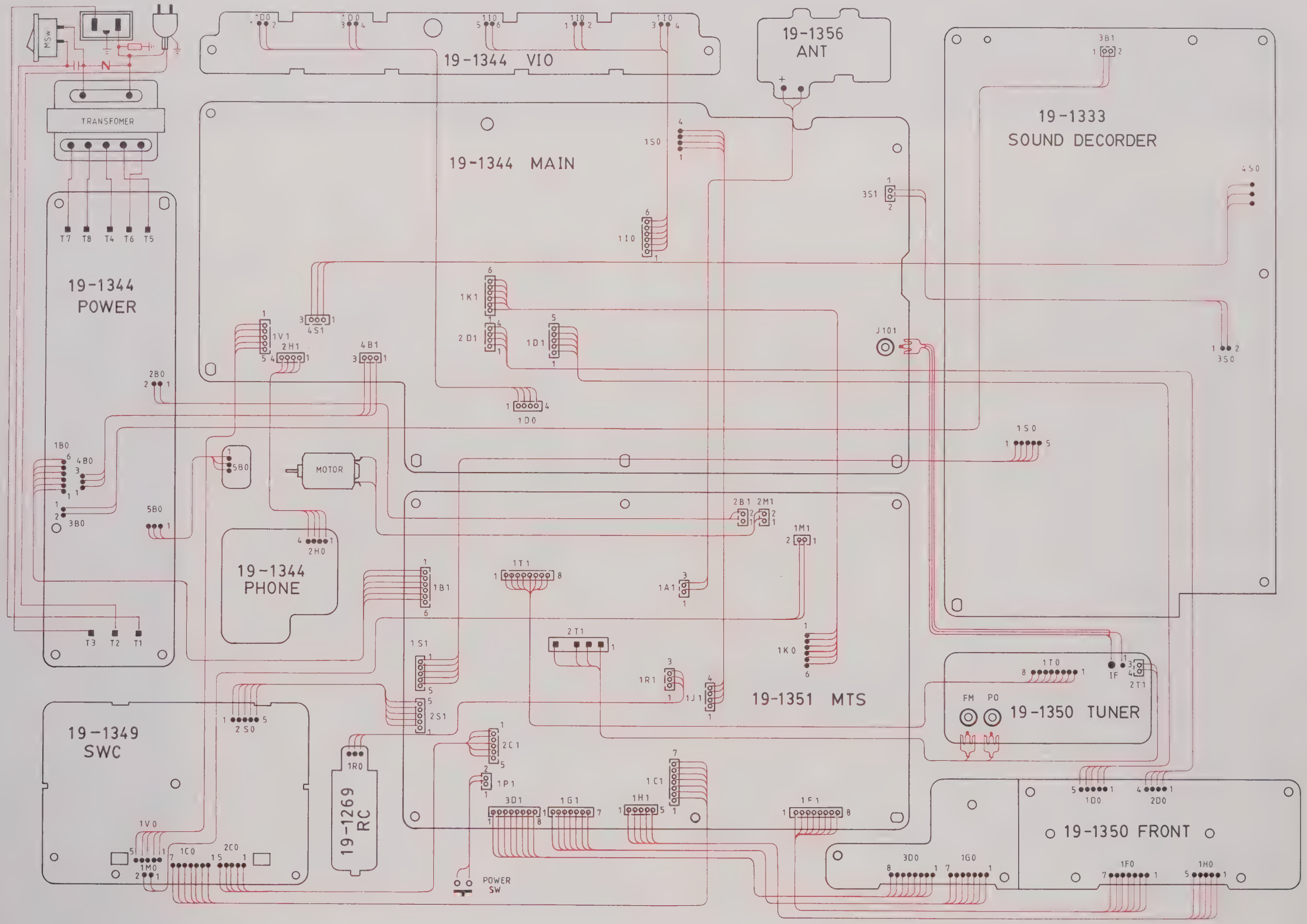
PCB PARTS LOCATION (BOTTOM VIEW)



PCB PARTS LOCATION (TOP VIEW)



INTERCONNECT DIAGRAM



ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTIONS
R2	16-1/4CL154J	150 OHM 1/4W +-5% CARBON FILM
R4	16-1/4CL224J	220K OHM 1/4W +-5% CARBON FILM
R6	16-1/4CL220J	22K OHM 1/4W +-5% CARBON FILM
R7	16-1/4CL102J	1K OHM 1/4W +-5% CARBON FILM
R81	16-1/4CS820J	82 OHM 1/4W +-5% CARBON FILM
R82	16-1/4CS1R5J	1.5 OHM 1/4W +-5% CARBON FILM
R83	16-1/4CS1R5J	1.5 OHM 1/4W +-5% CARBON FILM
R84	16-1/4CS220J	22 OHM 1/4W +-5% CARBON FILM
R85	16-1/4CS102J	1K OHM 1/4W +-5% CARBON FILM
R86	16-1/4CS331J	330 OHM 1/4W +-5% CARBON FILM
R101	16-1/4CA680J	68 OHM 1/4W +-5% CARBON FILM
R103	16-1/4CA271J	270 OHM 1/4W +-5% CARBON FILM
R104	16-1/4CA122J	1K2 OHM 1/4W +-5% CARBON FILM
R105	16-1/4CA101J	100 OHM 1/4W +-5% CARBON FILM
⚠ R106	16-1/4AN100J	10 OHM 1/4W +-5% METAL OXIDE
R107	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R108	16-1/4CA122J	1K2 OHM 1/4W +-5% CARBON FILM
R109	16-1/4CA821J	820 OHM 1/4W +-5% CARBON FILM
R110	16-1/4CA122J	1K2 OHM 1/4W +-5% CARBON FILM
R111	16-1/4CA563J	56K OHM 1/4W +-5% CARBON FILM
R112	16-1/4CA221J	220 OHM 1/4W +-5% CARBON FILM
R113	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
R114	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R115	16-1/4CA473J	47K OHM 1/4W +-5% CARBON FILM
R116	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R117	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R118	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R119	16-1/4CA681J	680 OHM 1/4W +-5% CARBON FILM
R120	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R121	16-1/4CA152J	1K2 OHM 1/4W +-5% CARBON FILM
R122	16-1/4CA152J	1K5 OHM 1/4W +-5% CARBON FILM
R123	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R124	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R125	16-1/4CA101J	100 OHM 1/4W +-5% CARBON FILM
R126	16-1/4CA122J	1K2 OHM 1/4W +-5% CARBON FILM
R127	16-1/4CA391J	390 OHM 1/4W +-5% CARBON FILM
R128	16-1/4CA391J	390 OHM 1/4W +-5% CARBON FILM
R129	16-1/4CA681J	680 OHM 1/4W +-5% CARBON FILM
R130	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R131	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R141	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R142	16-1/4CA153J	15K OHM 1/4W +-5% CARBON FILM
R143	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R144	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R145	16-1/4CA153J	15K OHM 1/4W +-5% CARBON FILM
R146	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R147	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R148	16-1/4CA153J	15K OHM 1/4W +-5% CARBON FILM
R149	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R150	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R151	16-1/4CA153J	15K OHM 1/4W +-5% CARBON FILM
R152	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R153	16-1/4CA821J	820 OHM 1/4W +-5% CARBON FILM
R154	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R155	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R156	16-1/4CA821J	820 OHM 1/4W +-5% CARBON FILM
R157	16-1/4CA681J	680 OHM 1/4W +-5% CARBON FILM
R158	16-1/4CA4R7J	4.7 OHM 1/4W +-5% CARBON FILM
R159	16-1/4CA4R7J	4.7 OHM 1/4W +-5% CARBON FILM
R160	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R161	16-1/4CA821J	820 OHM 1/4W +-5% CARBON FILM
R162	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM

Note: The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTIONS
R163	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R164	16-1/4CA821J	820 OHM 1/4W +-5% CARBON FILM
R165	16-1/4CA681J	680 OHM 1/4W +-5% CARBON FILM
R166	16-1/4CA4R7J	4.7 OHM 1/4W +-5% CARBON FILM
R167	16-1/4CA4R7J	4.7 OHM 1/4W +-5% CARBON FILM
R168	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R175	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R176	16-1/4CA682J	6K8 OHM 1/4W +-5% CARBON FILM
R177	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R178	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R179	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R180	16-1/4CA391J	390 OHM 1/4W +-5% CARBON FILM
R181	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
R182	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
R183	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
R184	16-1/4CA682J	6K8 OHM 1/4W +-5% CARBON FILM
R185	16-1/4CA333J	33K OHM 1/4W +-5% CARBON FILM
R186	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R187	16-1/4CA682J	6K8 OHM 1/4W +-5% CARBON FILM
R188	16-1/4CA392J	3K9 OHM 1/4W +-5% CARBON FILM
R189	16-1/4CA471J	470 OHM 1/4W +-5% CARBON FILM
R190	16-1/4CA682J	6K8 OHM 1/4W +-5% CARBON FILM
R191	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R192	16-1/4CA221J	220 OHM 1/4W +-5% CARBON FILM
R193	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R194	16-1/4CA473J	47K OHM 1/4W +-5% CARBON FILM
R195	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R196	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R197	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R198	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R199	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R201	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R202	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R203	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R204	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R206	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R207	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R208	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R209	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R251	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R252	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R253	16-1/4CA474J	470K OHM 1/4W +-5% CARBON FILM
R254	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R255	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R256	16-1/4CA474J	470K OHM 1/4W +-5% CARBON FILM
R257-R262	16-1/4CA563J	56K OHM 1/4W +-5% CARBON FILM
R263-R266	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
⚠ R267	16-1/4AN220J	22 OHM 1/4W +-5% METAL OXIDE
R268	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
⚠ R269	16-1/4AN220J	22 OHM 1/4W +-5% METAL OXIDE
R270-R271	16-1/4CA104J	100 OHM 1/4W +-5% CARBON FILM
R272-R275	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R276	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R277-R278	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R279-R280	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R281-R282	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R283	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R285-R287	16-1/4CA473J	47K OHM 1/4W +-5% CARBON FILM
R290	16-1/4CA474J	470K OHM 1/4W +-5% CARBON FILM
R301-R307	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R308	16-1/4CA683J	68K OHM 1/4W +-5% CARBON FILM
R309	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM

Note: The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTIONS
R310	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R311	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R312	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R313-R314	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R315	16-1AN561J	560 OHM 1/4W +-5% CARBON FILM
R316	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R317	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R318	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R320	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R321	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R322	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R323	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R324	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R325	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R326	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R327	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R328	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R329	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R330	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R331	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R332	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R333	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R334	16-1AN820J	82 OHM 1/4W +-5% CARBON FILM
R335	16-1AN151J	150 OHM 1/4W +-5% CARBON FILM
R336	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R337-R338	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
R339	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R340	16-1/4CA224J	220K OHM 1/4W +-5% CARBON FILM
R341-R342	16-1/4CA333J	33K OHM 1/4W +-5% CARBON FILM
R343	16-1/4CA332J	3K9 OHM 1/4W +-5% CARBON FILM
R344	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R345	16-1/4CA473J	47K OHM 1/4W +-5% CARBON FILM
R346-R349	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R350	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R352-R353	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R359	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R361-R368	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R372	16-1/4CA124J	120K OHM 1/4W +-5% CARBON FILM
R373-R374	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R375	16-1/4CA224J	220K OHM 1/4W +-5% CARBON FILM
R376	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R377	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R378	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R379-R380	16-1/4CA563J	56K OHM 1/4W +-5% CARBON FILM
R381	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R382	16-1AN4R7J	4.7 OHM 1W +-5% METAL OXIDE
R383	16-1AN222J	2K2 OHM 1W +-5% METAL OXIDE
R384	16-1AN181J	180 OHM 1W +-5% METAL OXIDE
R401	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R402	16-1/4CA392J	3K9 OHM 1/4W +-5% CARBON FILM
R403	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R404	16-1/4CA392J	3K9 OHM 1/4W +-5% CARBON FILM
R421-R422	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R423	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R751-R752	16-1/4CA241J	240 OHM 1/4W +-5% CARBON FILM
R753	16-1/4CA241J	240 OHM 1/4W +-5% CARBON FILM
R754-R756	16-1/4CA820J	82 OHM 1/4W +-5% CARBON FILM
R757-R760	16-1/4CA680J	68 OHM 1/4W +-5% CARBON FILM
R771-R772	16-1/4CA333J	33K OHM 1/4W +-5% CARBON FILM
R773-R774	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
R775-R776	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
⚠ R777	16-1/4AN220J	22 OHM 1/4W +-5% METAL OXIDE

Note: The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTIONS
R778	16-1/4CA470J	47 OHM 1/4W +-5% CARBON FILM
R779	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R780	16-1/4CA470J	47 OHM 1/4W +-5% CARBON FILM
R781	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R801	16-1/2SP335K	3M3 OHM 1/2W +-10% COMPOSITION
R802	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R803-R807	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R808	16-1AN3R3J	3 OHM 1W +-5% METAL OXIDE
R809	16-1/4CA821J	820 OHM 1/4W +-5% CARBON FILM
R810	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R811-R812	16-1/4CA473J	47K OHM 1/4W +-5% CARBON FILM
R813	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R814-R815	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R816	16-1/4CA103J	1K OHM 1/4W +-5% CARBON FILM
R817	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R818	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R819	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
CAPACITORS		
C2	17-5H333J	MMY 0.033uF 50V +-5%
C3	17-5F332J	MY 3300PF 50V +-5%
C4	17-1.6M106M	EL 10uF 16V +-20%
C6	17-1.6M106M	EL 10uF 16V +-20%
C7	17-1.6M106M	EL 10uF 16V +-20%
C8	17-1.6M476M	EL 47uF 16V +-20%
C101	17-5DR220JRH	CER 22pF 50V +-5% RH
C102	17-5DR103Z	CER 0.01uF 50V +80-20%
C104	17-5DR103Z	CER 0.01uF 50V +80-20%
C105	17-5DR102K	CER 1000pF 50V +-10%
C106	17-5DR103Z	CER 0.01uf 50V +80-20%
C107	17-3.5OF334K	TAS 0.33uf 35V +-10%
C108	17-5DR103Z	CER 0.01uf 50V +80-20%
C109	17-5DR102K	CER 1000pF 50V +-10%
C110	17-5DR103Z	CER 0.01uF 50V +80-20%
C111	17-5DR223Z	CER 0.022uF 50V +80-20%
C112	17-5DF473Z	CER 0.047uF 50V +80-20%
C113	17-5DR103Z	CER 0.01uF 50V +80-20%
C114	17-5ER105Y	EL 1uF 50V +50-10%
C115	17-5SR684M	ELBP 0.68uF 50V +-20%
C116	17-1.6ER106Y	EL 10uF 16V +50-10%
C117	17-5DR102K	CER 1000pF 50V +-10%
C118	17-5TR104K	MYN 0.1uF 50V +-10%
C119	17-5ER105Y	EL 1uF 50V +50-10%
C120-C121	17-5DR103Z	CER 0.01uF 50V +80-20%
C122	17-1.6ER336Y	EL 33uF 16V +50-10%
C123	17-5DR100JRH	CER 10pF 50V +-5%RH
C124	17-5DR121K	CER 120pF 50V +-10%
C126	17-5ER224Y	EL 0.22uF 50V +50-10%
C127	17-5U102J	PS 1000pF 50V +-5%
C128	17-1.6ER336Y	EL 33uF 16V +50-10%
C141-C144	17-1.6ER336Y	EL 33uF 16V +50-10%
C145	17-5DR100JRH	CER 10pF 50V +-5% RH
C146	17-1.6ER107Y	EL 100uF 16V +50-10%
C147	17-1.6EF108Y	EL 1000uF 16V +50-10%
C148	17-5DR100JRH	CER 10pF 50V +-5% RH
C149	17-1.6ER107Y	EL 100uF 16V +50-10%
C150	17-1.6ER108Y	EL 1000uF 16V +50-10%
C151	17-1.6ER336Y	EL 33uF 16V +50-10%
C175	17-5DR102K	CER 1000pF 50V +-10%
C176	17-5ER105Y	EL 1uF 50V +50-10%
C177-C180	17-5DR103Z	CER 0.01uF 50V +80-20%
C181	17-5FR473J	MY 0.047uF 50V +-5%
C182	17-5FR475Y	EL 4.7uF 25V +50-10%

Note: The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTIONS
C183	17-5HR683J	MY 0.068uF 50V +-5%
C184-C185	17-5TR332J	MYN 3300pF 50V +-5%
C186	17-5FR473J	MY 0.047uF 50V +-5%
C187	17-5DR103Z	CER 0.01uF 50V +80-20%
C188	17-5DR222Z	CER 2200pF 50V +80-20%
C189	17-1.6ER336Y	EL 33uF 16V +50-10%
C190	17-1.6ER106Y	EL 10uF 16V +50-10%
C191	17-DR472K	CER 4700pF 50V +-10%
C192	17-ER105Y	EL 1uF 50V +50-10%
C251	17-1.6ER106Y	EL 10uF 16V +50-10%
C252-R257	17-5TR104K	MYN 0.1uF 50V +-10%
C258	17-1.6ER107Y	EL 100uF 16V +50-10%
C259-C260	17-5ER474Y	EL 0.47uF 50V +50-10%
C261	17-1.6ER107Y	EL 100uF 16V +50-10%
C262-C263	17-5ER474Y	EL 0.47uF 50V +50-10%
C264	17-1.6ER476Y	EL 47uF 16V +50-10%
C265-C266	17-5FR682J	MY 6800pF 50V +-5%
C267	17-1.6ER107Y	EL 100uFF 16V +50-10%
C268-C269	17-1.6ER106Y	EL 10uF 16V +50-10%
C270-C271	17-5HF474J6Y	MMY 0.47uF 50V +-5%
C272	17-2.5ER475Y	EL 4.7uF 25V +50-10%
C273-C274	17-5ER474Y	EL 0.47uF 50V +50-105
C275-C277	17-5EF224M	EL 0.22uF 50V +-20%
C278	17-1.6ER107Y	EL 100uF 16V +50-10%
C279	17-5HF474J	MMY 0.47uF 50V +-5%
C280-C281	17-5ER474Y	EL 0.47uF 50V +50-10%
C285-C288	17-5DR472K	CER 4700pF 50V +-10%
C301	17-5DR223Z	CER 0.022uF 50V +80-20%
C302	17-1.6ER336Y	EL 33uF 16V +50-10%
C303	17-5ER225Y	EL 2.2uF 50V +50-10%
C304	17-5TR103J	MYN 0.01uF 50V +-5%
C305	17-5DR180JRH	CER 18pF 50V +-5% RH
C306	17-5DR220JRH	CER 22pH 50V +-5% RH
C307	17-ER474Y	EL 0.47uF 50V +50-10%
C308	17-5ER474Y	EL 0.47uF 50V +50-10%
C309	17-5DR103Z	CER 0.01uF 50V +80-20%
C320	17-1.6ER476Y	EL 47uF 16V +50-10%
C341	17-5DR223Z	CER 0.022uF 50V +80-20%
C342-C343	17-5TR102J	MYN 1000pF 50V +-5%
C344	17-5ER105Y	EL 1uF 50V +50-10%
C361	17-2.5ER475Y	EL 4.7uF 25V +50-10%
C362-C369	17-5DR103Z	CER 0.01uF 50V +80-20%
C371	17-5ER105Y	EL 1uF 50V +50-10%
C372	17-2.5ER475Y	EL 4.7uF 25V +50-10%
C374	17-5ER225Y	EL 2.2uF 50V +50-10%
C375	17-5ER105Y	EL 1uF 50V +50-10%
C376	17-1.6ER335Y	EL 3.3uF 16V +50-10%
C377	17-1.6ER336Y	EL 33uF 16V +50-10%
C378	17-1.6ER477Y	EL 470uF 16V +50-10%
C379	17-5ER105Y	EL 1uF 50V +50-10%
C711	17-1.6ER336Y	EL 33uF 16V +50-10%
C712	17-1.6ER106Y	EL 10uF 16V +50-10%
C713-C717	17-1.6ER336Y	EL 33uF 16V +50-10%
C718	17-5TR104K	MYN 0.1uF 16V +-10%
⚠ C801-C802	17-2011	CER 4700pF 125VAC UL/CSA
⚠ C803-C804	17-50DF472Z	CER 4700pF 500V +80-20%
⚠ C805	17-3.5EF107Y	EL 100uF 35V +50-10%
C806	17-50DF472ZY	CER 4700pF 500V +80-20%
⚠ C807	17-3.5EG228Y	EL 2200uF 35V +50-10%
C808	17-1.6ER476Y	EL 47uF 16V +50-10%
⚠ C809	17-10EG107Y	EL 100uF 100V +50-10%
C810-C811	17-5ER105Y	EL 1uF 50V +50-10%

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTIONS
C813	17-1.6EF108Y	EL 1000uF 16V +50-10%
C814	17-1.6EF477Y	EL 470uF 16V +50-10%
C771-C775	17-1.6ER336Y	EL 33uF 16V +50-10%
DIODE		
D141-D154	30-1152TA	1N4148
D175-D178	30-1152TA	1N4148
D251-D258	30-1152TA	1N4148
D301-D315	30-1152TA	1N4148
D341-D349	30-1152TA	1N4148
D361-D379	30-1152TA	1N4148
D381-D389	30-1152TA	1N4148
⚠ D801-802	30-1162	DL02 BRIDGE RECT
D804	30-1152TA	1N4148
TRANSISTOR		
Q101	30-2336	BF959
Q121-Q122	30-2085-2TR	BC559B
Q123	30-2084-2TR	BC549B
Q141-Q148	30-2084-2TR	BC549B
Q149	30-2085-2TR	BC559B
Q150-Q153	30-2084-2TR	BC549B
Q154	30-2085-2TR	BC559B
Q175	30-2074-2TR	BC557B
Q176-Q181	30-3074-2TR	BC547B
Q182	30-2332-2TR	BC557B
Q183-Q184	30-2074-2TR	BC547B
Q251-Q254	30-2074-2TR	BC547B
Q301	30-2332-2TR	BC557B
Q302-Q303	30-2074-2TR	BC547B
Q311	30-2074-2TR	BC547B
Q320-Q326	30-2332-2TR	BC557B
Q341	30-2074-2TR	BC547B
Q342	30-2332-2TR	BC557B
Q343	30-2342-1	BC327-25
Q371-Q372	30-2074-2TR	BC547B
Q373	30-2332-2TR	BC557B
Q801	30-2074-2TR	BC547B
Q802	30-2332-2TR	BC557B
Q803	30-2341-1	2SC1890
Q804	30-2340-2	2SA893
Q805	30-2341-1	2SC1890
Q806	30-2337	BC337-16
Q807	30-2074-2TR	BC547B
INTEGRATED CIRCUITS		
IC101	30-3227	TV IF AMP TDA3541
IC102	30-3222	TV SIF AMP TDA2546
IC141	30-3328	CD-4052BE
IC142	30-3328	CD-4052BE
IC251-IC254	30-3069	DUAL OP RC4558/UPC4558N
IC255-IC256	30-3328	CD-4052BE
IC257	30-3229	DUAL DC TONE VOL BAL LM 1035
IC301	30-3353	TV TUNING UPD1709C-113
IC302	30-3355	DUAL 1/4 DECODER CD4556BE
IC303	30-3008	D-TYPE FLIP-FLOP CD4013B
IC304	30-3356	HEX SCHMITT CD40106BE
IC361	30-3327	CD-4027BE
IC362	30-3327	CD-4027BE
IC371	30-3327	CD-4027BE
IC372	30-3356	HEX SCHMITT CD40106BE
IC373	30-3357	MOTOR DRIVER BA6208
IC771	30-3368	HEADPHONE TDA2822M
⚠ IC801	30-3240	REGULATOR AN7812/HA17812P
⚠ IC802	30-3225	REGULATOR UPC574J

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTIONS
⚠ IC803	30-3225	REGULATOR UPC574J
IC1	30-3337	IR PREAMP UPC1373H
SF101	29-3140	CF OFW M3250
SF101	29-3136	CF SIF SFE 4.5MB
X301	30-4005	XTAL 4.5MHz KD-0638DC
X81	29-3174	CR CSB455E
Z251-Z256	16-2009	DR ASSY
Z257	16-2010	RES ASSY 22K x 4
Z301	16-2011	RES ASSY 22K x 7
Z302-Z303	16-2010	RES ASSY 22K x 4
	35-2042	TUNER EC-BU-6157
K721	35-3049	RELAY RF G4Y-1529 12VDC
K722	35-3050	RELAY G2E 12VDC
⚠ K801	35-3034	RELAY JC2APC12V
S802	31-1254	PUSH SWITCH
⚠ P801	14-5052	POWER CORD
J801	12-2182	SOCKET AC 49KB
Z801	16-2008	ZNR ER2-C10DK221
⚠ T801	29-2130-4	XFMR PW EI-57 120V (UL)
⚠ T801	29-2130-2	XFMR PW EI-57 110V (LC)
⚠ T801	29-2130-1	XFMR PW EI-57 120V (CSA)
⚠ S801	31-1339	SW POWER SDJIS
C901	17-50DF472J	CAP CER SM 4700pF 500V +80-20%
S421	31-1341	SW TACT KHC15901
S422-S424	31-1260-1	SW SLIDE SSBO22NA02-FL
S431-S443	31-1340	SW TACT KHH10906-A
⚠ F801	32-13000W	FUSE 6.3x32MM UL CSA SLOW 300MA
FUSE FOLD	11-3025	LUG FUSE x 2
J101	12-2067	RCA SOCKET 1p PCB TYPE
J251-J253	12-2130	JACK PIN 2P
J254-J255	12-2131	JACK PIN 4P
J721	12-2036	RCA SOCKET
J722-J724	12-1T17	F CONNECTOR
J751-J757	12-2172	RCA PIN JACK JPJ543-01-020
J771	12-2181	PHONE JACK
J101	12-2067	RCA SOCKET 1P PCB TYPE
⚠ MORTOR	35-5007	MOTOR MMN-692 12VDC
ZD175	30-1058	DIODE ZENER RD5.1EB3
ZD301	30-1058	DIODE ZENER RD5.1EB3
ZD320	30-1058	DIODE ZENER RD5.1EB3
ZD371	30-1011	DIODE ZENER RD12EB3
ZD801	30-1011	DIODE ZENER RD12EB3
ZD802	30-1235	DIODE ZENER RD9.1EB2
ZD121	30-1058	DIODE ZENER RD5.1EB3
DP401	31-3006	LED DISPLAY CS422
LD413	30-1076	LED LT-3251Y
LD401	30-1085	LED LT-3231G
LD402	30-1076	LED LT-3251Y
LD403-LD412	30-1075	LED LT-3211R
S401-S412	31-1340	SW TACT KHH10906-A
L101	29-1159	COIL 1uH +-20%
L102	29-1156	COIL VARI 1.2uH 2.52mhZ SIF
L103	29-1154*A	COIL VARI 45.75 MHz PIF
L104	29-1157	COIL 6.8uH +-20%
L105	29-1158	COIL 2.2uH +-5%
L106	29-1154*A	COIL VARI 45.75 MHz PIF
L107	29-1155*A	COIL VARI 45.75 MHz AFT
L108	29-1235	COIL 1.5uH +-10%
L109	29-1183	COIL 10uH +-10%
L110	29-1158	COIL 2.2uH +-20%
L111	29-1185	COIL 100uH +-10%

REF.NO.	PART NO.	DESCRIPTIONS
L112	29-1236	COIL 18uH +-10%
VR101	VR03-F08103B	SEMI-FIX 8 OHM 10KB FLAT/SHAFT
VR102	VR03-V08203B	SEMI-FIX 8 OHM 20KB FLAT/SHAFT
VR421-VR423	29-4270	VR 22MM 50KB FI-10
VR751-VR753	29-4271	VR 12o 500B PIK 10CC

Note: The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTIONS
R502	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R503	16-1/4CA154J	150K OHM 1/4W +-5% CARBON FILM
R504	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R505	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R511	16-1/4CA153J	15K OHM 1/4W +-5% CARBON FILM
R512	16-1/4CA272J	2K7 OHM 1/4W +-5% CARBON FILM
R513	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R514	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R515	16-1/4CA273J	27K OHM 1/4W +-5% CARBON FILM
R516	16-1/4CA562J	5K6 OHM 1/4W +-5% CARBON FILM
R517	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R518	16-1/4CS512J	5K1 OHM 1/4W +-5% CARBON FILM
R519	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R520	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R521	16-1/4CA124J	120K OHM 1/4W +-5% CARBON FILM
R522	16-1/4CA333J	33K OHM 1/4W +-5% CARBON FILM
R523	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R524	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R525	16-1/4CA682J	6K8 OHM 1/4W +-5% CARBON FILM
R527	16-1/4CA101J	100 OHM 1/4W +-5% CARBON FILM
R528	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R531	16-1/4CA153J	15K OHM 1/4W +-5% CARBON FILM
R532	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R533	16-1/4CA154J	150K OHM 1/4W +-5% CARBON FILM
R534	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R535	16-1/4AN220J	22 OHM 1/4W +-5% METAL OXIDE
R540	16-1/4CA563J	56K OHM 1/4W +-5% CARBON FILM
R541	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R542	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R543	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R544	16-1/4CA682J	6K8 OHM 1/4W +-5% CARBON FILM
R545	16-1/4CA183J	18K OHM 1/4W +-5% CARBON FILM
R546	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R547-R548	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R549	16-1/4CA473J	47K OHM 1/4W +-5% CARBON FILM
R551	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R552	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R553	16-1/4CA333J	33K OHM 1/4W +-5% CARBON FILM
R554	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R555-R556	16-1/4CA184J	180K OHM 1/4W +-5% CARBON FILM
R557	16-1/4CS362J	3K6 OHM 1/4W +-5% CARBON FILM
R561	16-1/4CA273J	27K OHM 1/4W +-5% CARBON FILM
R562	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R563-R564	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R565-R566	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R571	16-1/4CA151J	150 OHM 1/4W +-5% CARBON FILM
R572	16-1/4CS512J	5K1 OHM 1/4W +-5% CARBON FILM
R573	16-1/4CS102J	1K OHM 1/4W +-10% CARBON FILM
R574-R575	16-1/4CA394J	390K OHM 1/4W +-5% CARBON FILM
R581	16-1/4CA151J	150 OHM 1/4W +-5% CARBON FILM
R582	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R583	16-1/4CA393J	39K OHM 1/4W +-5% CARBON FILM
R584	16-1/4CA124J	120K OHM 1/4W +-5% CARBON FILM
R585	16-1/4CS362J	3K6 OHM 1/4W +-5% CARBON FILM
R586-R587	16-1/4CA184J	180 OHM 1/4W +-5% CARBON FILM
R591	16-1/4CA331J	3K3 OHM 1/4W +-5% CARBON FILM
R592	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R593	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R594	16-1/4CA473J	47K OHM 1/4W +-5% CARBON FILM
R596	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R601	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R602	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM

REF. NO.	PART NO.	DESCRIPTIONS
R603	16-1/4CA153J	15K OHM 1/4W +-5% CARBON FILM
R604	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R605	16-1/4CA472J	4K7 OHM 1/4W +-5% CARBON FILM
R606	16-1/4CA681J	680 OHM 1/4W +-5% CARBON FILM
R607	16-1/4CA332J	3K3 OHM 1/4W +-5% CARBON FILM
R608	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R609	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R611	16-1/4CA272J	2K7 OHM 1/4W +-5% CARBON FILM
R612	16-1/4CA331J	330 OHM 1/4W +-5% CARBON FILM
R613	16-1/4CA392J	3K9 OHM 1/4W +-5% CARBON FILM
R614-R615	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R621	16-1/4CA124J	120K OHM 1/4W +-5% CARBON FILM
R622	16-1/4CA123J	12K OHM 1/4W +-5% CARBON FILM
R623	16-1/4CA222J	2K2 OHM 1/4W +-5% CARBON FILM
R624	16-1/4CA223J	22K OHM 1/4W +-5% CARBON FILM
R625	16-1/4CA334J	330K OHM 1/4W +-5% CARBON FILM
R626-R628	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R629	16-1/4CA394J	390K OHM 1/4W +-5% CARBON FILM
R631	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R633-R634	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R641-R648	16-1/4CA333J	33K OHM 1/4W +-5% CARBON FILM
R651-R653	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R655-R656	16-1/4CA104J	100K OHM 1/4W +-5% CARBON FILM
R671	16-1/4CA273J	2K7 OHM 1/4W +-5% CARBON FILM
R672	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R673	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R674	16-1/4CA471J	470 OHM 1/4W +-5% CARBON FILM
R675	16-1/4CA273J	27K OHM 1/4W +-5% CARBON FILM
R676	16-1/4CA103J	10K OHM 1/4W +-5% CARBON FILM
R677	16-1/4CA102J	1K OHM 1/4W +-5% CARBON FILM
R678	16-1/4CA471J	470 OHM 1/4W +-5% CARBON FILM
R683	16-1/4CA271J	270 OHM 1/4W +-5% CARBON FILM
CAPACITORS		
C511-C512	17-1.6ER106Y	CER 10uF 16V +50-10%
C514	17-5ER225Y	EL 2.2uF 50V +50-10%
C515	17-5DR331K	CER 330pF 50V +-10%
C516	17-5TR153K	MYN 0.015uF 50V +-5%
C521	17-5TR103J	MYN 0.01uf 50V +-5%
C522	17-2.5ER475Y	EL 4.7uF 25V +50-10%
C524	17-5ER105Y	EL 1uF 50V +50-10%
C525	17-1.6ER476Y	EL 47uF 50V +50-10%
C526	17-1.6ER107Y	EL 100uF 16V +50-10%
C527	17-5DR473Z	CER 0.047uF 50V +80-20%
C531	17-5U102J	PS 1000pF 50V +-5%
C532-C533	17-5ER105Y	EL 1uF 50V +50-10%
C534	17-1.6ER106Y	EL 10uF 16V +50-10%
C535	17-5TR333J	MYN 0.033uF 50V +-5%
C536	17-1.6ER476Y	EL 47uF 16V +50-10%
C541	17-2.5ER475Y	EL 4.7uF 25V +50-10%
C542	17-5HF474J	MMY 0.47uF 50V +-5%
C543	17-5TR333J	MYN 0.033uF 50V +-5%
C544	17-5ER225Y	EL 2.2uF 50V +50-10%
C551	17-5ER105Y6Y	EL 1uF 50V +50-10%
C552	17-5TR222J	MYN 2200pF 50V +-5%
C553-C554	17-5FH224J	MY 0.22uF 50V +-5%
C555	17-5TR222J	MYN 2200pF 50V +-5%
C561-C564	17-5TR332J	MYN 3300pF 50V +-5%
C571	17-1.6ER476Y	EL 47uF 16V +50-10%
C572	17-2.5OR335K	TAS 3.3uF 25V +-10%
C573	17-3.5OR105K	TAS 1uF 35V +-10%
C574	17-5DR472K	CER 4700pF 50V +-10%
C575	17-2.5ER335Y	EL 3.3uF 25V +50-10%

REF. NO.	PARTS NO.	DESCRIPTIONS		
C576	17-1.6ER106Y	EL	10uF	16V +50-10%
C577	17-5ER105Y	EL	1uF	50V +50-10%
C581	17-1.6OR106K	TAS	10uF	16V +-10%
C582	17-5DR472K	CER	4700pF	50V +-10%
C583	17-1.6OF476K	TAS	47uF	16V +-10%
C584	17-5TR104K	MYN	0.1uF	50V +-10%
C585	17-5TR103J	MYN	0.01uF	50V +-5%
C586	17-5ER105Y	EL	1uF	50V +50-10%
C587	17-5ER105Y	EL	1uF	50V +50-10%
C588	17-5TR222J	MYN	2200pF	50V +-5%
C589	17-5ER105Y	EL	1uF	50V +50-10%
C591	17-1.6ER106Y	EL	10uF	16V +50-10%
C592	17-2.5ER475Y	EL	4.7uF	25V +50-10%
C601-C602	17-5ER474Y	EL	0.47uF	50V +50-10%
C603	17-5TR102J	MYN	1000pF	50V +-5%
C604-C606	17-5ER105Y	EL	1uF	50V +50-10%
C611	17-5TR472J	MYN	4700pF	50V +-5%
C612	17-1.6ER476Y	EL	47uF	16V +50-10%
C613	17-5DR471K7Y	CER	470pF	50V +-10%
C614-C615	17-5ER105Y	EL	1uF	50V +50-10%
C616	17-5U102J	PS	1000pF	50V +-5%
C617	17-1.6ER226Y	CER	0.01uF	50V +80-20%
C618	17-1.6ER226Y	EL	22uF	16V +50-10%
C621	17-5ER105Y	EL	1uF	50V +50-10%
C622	17-5TR102J	MYN	1000pF	50V +-5%
C623	17-5TR104K	MYN	0.1uF	50V +-10%
C631	17-5SF225M	ELBP	2.2uF	50V +-20%
C651-C652	17-5SF225M	ELBP	2.2uF	50V +-20%
C671-C672	17-5ER225Y	EL	2.2uF	50V +50-10%
C673-C674	17-5TR104K	MYN	0.1uF	50V +-10%
C675-C676	17-5TR102J	MYN	1000pF	50V +-5%
C682	17-1.6EF227Y	EL	220uF	16V +50-10%
C683	17-5DH104Z	CER	0.1uF	50V +80-20%
C684	17-5DR103Z	CER	0.01uF	50V +80-20%
C685	17-1.6EF477Y	EL	470uF	16V +50-10%
DIODE				
D601-D602	30-1152TA	DIODE 1N4148		
D621-D622	30-1152TA	DIODE 1N4148		
TRANSISTOR				
Q501	30-2074-2TR	TR BC547B		
Q511-Q513	30-2074-2TR	TR BC547B		
Q521	30-2074-2TR	TR BC547B		
Q531	30-2332-2TR	TR BC557B		
Q541-Q542	30-2074-2TR	TR BC547B		
Q551	30-2074-2TR	TR BC547B		
Q561	30-2074-2TR	TR BC547B		
Q591	30-2074-2TR	TR BC547B		
Q601-Q602	30-2074-2TR	TR BC547B		
Q611	30-2332-2TR	TR BC557B		
Q621	30-2074-2TR	TR BC547B		
Q622	30-2332-2TR	TR BC557B		
Q623-Q624	30-2074-2TR	TR BC547B		
Q671-Q672	30-2074-2TR	TR BC547B		
Q681	30-3240	IC AN78M12		
INTEGRATED CIRCUITS				
IC521	30-3261	IC MPX TA7401AP		
IC571	30-3349	IC DBX DECODER AN6291		
IC581	30-3367	IC JFET-INPUT OP AMP TL081CP		
IC611	30-3348	IC SAP DECODER TA7133P		
IC631	30-3244	IC QUAD SW CD4066BE SGS		
IC641	30-30-69	IC DUAL OP RC4558/uPC4558N		
IC661	30-3244	IC QUAD SW CD4066BE SGS		

REF. NO.	PART NO.	DESCREPTIONS
ZD681	30-1202-1	DIODE ZENER H25C-1
Z501	29-3215	LPF MTS 258BLV-4485N
Z511	29-3127	LPF MTS 257BLR-3918N
Z541	29-3127	LPF MTS 257BLR-3918N
Z601	29-3216	BPF MTS 258BBV-4527N
CONTROLS VR		
VR511	VR03-F08102B	SEMI-FIX 8 OHM 1KB FLAT W/SHAFT
VR521	VR03-F08202B	SEMI-FIX 8 OHM 2KB FLAT W/SHAFT
VR531	VR03-F08103B	SEMI-FIX 8 OHM 10KB FLAT W/SHAFT
VR571	VR03-F08203B	SEMI-FIX 8 OHM 20KB FLAT W/SHAFT
VR581	VR03-F08202B	SEMI-FIX 8 OHM 2KB FLAT W/SHAFT
VR591	VR03-F08103B	SEMI-FIX 8 OHM 10KB FLAT W/SHAFT
VR611-VR612	VR03-F08103B	SEMI-FIX 8 OHM 1KB FLAT W/SHAFT

MECHANICAL PARTS LIST (601T)

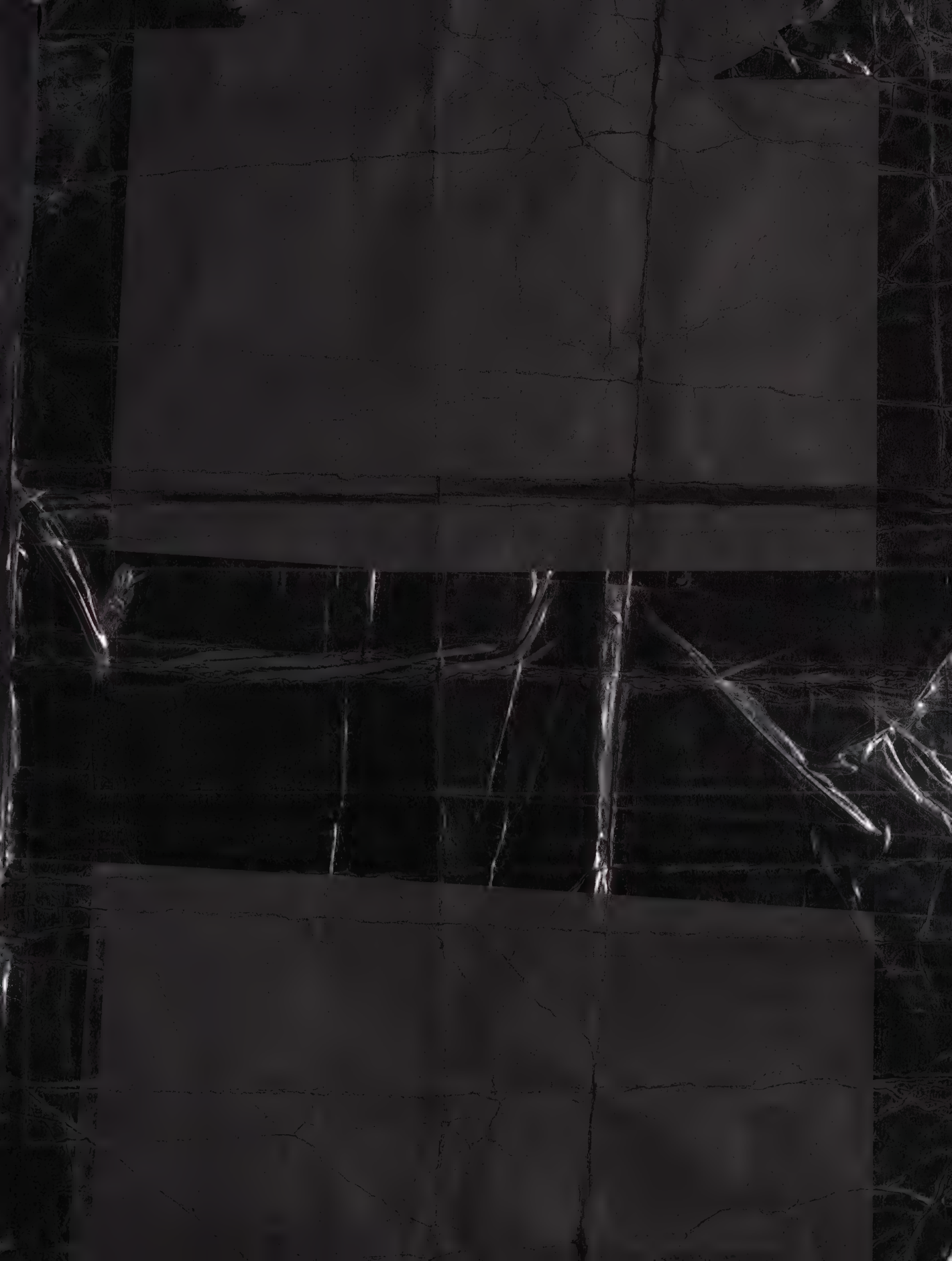
REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	11-8T33	FRONT PANEL	1
2	13-1T06	FRONT PANEL BASE	1
3	11-8T35	ACRYLIC SCREEN FOR R/C SENSOR	1
4	11-8T34	LIGHTING INDICATOR	8
5	12-3T23*A	CONTROL KNOB(A)-LED	8
6	12-3T24	CONTROL KNOB(B)-UP	2
7	12-3T25	CONTROL KNOB(C)-DOWN	2
8	28-2T01	DAMPING PADS	2
9	11-8T36	DISPLAY WINDOW	1
10	A4.2A20T0.25	WASHER	2
11	12-3T07	PUSH SW KNOB	1
12	11-2T74	BRACKET FOR FRONT PANEL	2
13	11-2T75	FIXED BRACKET	6
14	28-1T13	R/C DECTECTOR FIX BASE	1
15	11-1T24	R/C DECTECTOR SHIELD CASE	1
16	11-1T23	R/C DECTECTOR SHIELD CASE CAP	1
17	13-5T08	RACK	1
18	11-1T45	DRAWER CASE-BOTTOM	1
19	11-2T89	STOPPER BRACKET	1
20	28-2T26	MASK	3
21	11-2T99*A	PULLEY BRACKET	1
22	13-5T11	RAIL PULLEY	4
23	15-2T15	PLASTIC RIVET	2
24	11-2T120	PAD BRACKET	1
25	28-2T28	SPONGE	1
26	12-3T27	KNOB-TACK (GRAY)	10
27	12-3T26	KNOB-TACK (BLK)	3
28	11-1T44	DRAWER CASE-TOP	1
29	11-8T19	CONTROL PLATE	1
30	12-3T28	SLIDE KNOB	3
31	11-8T32	DRAWER PANEL	1
32	12-3T22	DRAWER KNOB	1
33	11-2T86	SIDE BRACKET (L)	1
34	13-5T06	PULLEY FOR RACK	1
35	13-5T09	RAIL HOLDER (R)	1
36	13-5T10	RAIL HOLDER (L)	1
37	15-2T14*A	BELT	1
38	A4.1A08T0.25	WASHER	2
39	13-5T07	PULLEY FOR MOTOR	1
40	A3.6A06T0.25	WASHER	3
41	11-2T96	LINKAGE BRACKET	2
42	13-7T25	HINGE	2
43	11-2T91	FRONT BRACKET	1
44	11-2T95	SUPPORT BRACKET	1
45	11-2T98	MIDDLE BRACKET	1
46	11-1T42	BOTTOM COVER	1
47	28-1029	RUB FT	4
48	28-2058*A	SPONGE	2
49	A04A10SZ01	WASHER	2
50	11-2T90	SIDE BRACKET (R)	1
51	50-1T21	REAR CABINAT	1
52	11-2T97	HINGE BRACKET	1
53	13-3T33	JACK BOARD	1
54	11-1T51	RF RELAY BOX	1
55	12-2036	RCA SOCKET	1
56	11-1T49	RF RELAY COVER	2
57	11-1T50	SHIELD CASE	1
58	12-1T17	CONNECTOR	3
59	13-3T32	ANTENNA BOARD	1
60	12-1008-5	CONNECTOR NUT	3
61	12-1001-6	CONNECTOR WASHER	6
⚠ 62	31-1339	SW POWER	1
63	28-2T27	SPONGE	1
64	14-5056	CORD BUSHING 5KN-4	1
65	11-1T43	TOP COVER	1
66	11-3026	LUG	1
67	13-4T10	INSULATION	1
68	21-2T76	TAG	1
69	19-1344	MAIN PCB	1
70	19-1344	TUNER PCB	1
71	19-1344	POWER PCB	1
72	19-1344	VIO PCB	1
73	19-1344	PHONE PCB	1
74	19-1344	POWER IC PCB	1
75	19-1449	SW CONTROL PCB	1
76	19-1350	FRONT PCB	1
77	19-1351	MTS PCB	1
78	19-1333	DBX PCB	1
79	19-1269	R/C PRE PCB	1
80	31-1254	PUSH SW	1
81	12-2181	PHONES	1
⚠ 82	35-5007	MOTOR	1
⚠ 83	29-2130-4	TRANSFORMER (UL)	1
	29-2130-1	TRANSFORMER (CSA)	1
84	35-2042	TUNER	1
85	12-2131	JACK PIN 4P	2
86	12-2130	JACK PIN 2P	3
87	19-1356	RF RELAY PCB	1
⚠ 88	12-2182	AC OUTLET SOCKET	1
⚠ 89	14-5052	POWER CORD	1
⚠ 90	35-3034	POWER RELAY	1
S1	S1B03+I10SZ-2	MACHINE SCREW	1
S2	S1E03+I06SL-2	MACHINE SCREW	9
S3	S2B03+I12SZ-2	TAPPING SCREW	2
S4	S2B03+I08SZ-2	TAPPING SCREW	19
S5	S1B03+I06SL-2	MACHINE SCREW	2
S6	S2B03+I16SL-2	TAPPING SCREW	4
S7	S1B03+I06SZ-2	MACHINE SCREW	3
S8	S2B03+I04SL-2	TAPPING SCREW	1
S9	S2B03+I06SZ-2	TAPPING SCREW	39
S10	15-2A01	SPECIAL SCREW	3
S11	15-2A02	SPECIAL SCREW	2
S12	15-2062	SPECIAL SCREW	4
S13	15-2063	SCREW-STANDER'S	4
S14	S2B03+I06SL-2	TAPPING SCREW	5
S15	S2B03+I08SL-2	TAPPING SCREW	12
S16	S1B04+I05SZ-2	MACHINE SCREW	2
S17	S1B04+I06SC-2	MACHINE SCREW	1
A1	CT-5T54	SHIPPING CARTON	0.25
A2	CT-5T53-2	CORTON	1
A3	34-1T35	POLYLON (R)	1
A4	34-1T36	POLYLON (L)	1
A5	B-01	X'MER BALUM	1
A6	21-3037*A	WARRANTY CARD	1
A7	21-4T18	INSTRUCTION MANUAL	1
A8	21-3051	WARRANTY CARD	1
A9	14-4063	WIRE ASS'Y 1P 1.3M	2
A10	12-1033*B	RCA TO RCA CONNECTOR	2
A11	13-7002	STOPPER WIRE	20
A12	13-7016*A	AC CORD BAND	1
A13	26-0005*A	POLY PAPER (SET)	1
A14	26-0012	POLY PAPER	2
A15	26-1321	POLY BAG (AC CORD)	1
A16	26-2434	POLY BAG (MANUAL)	1

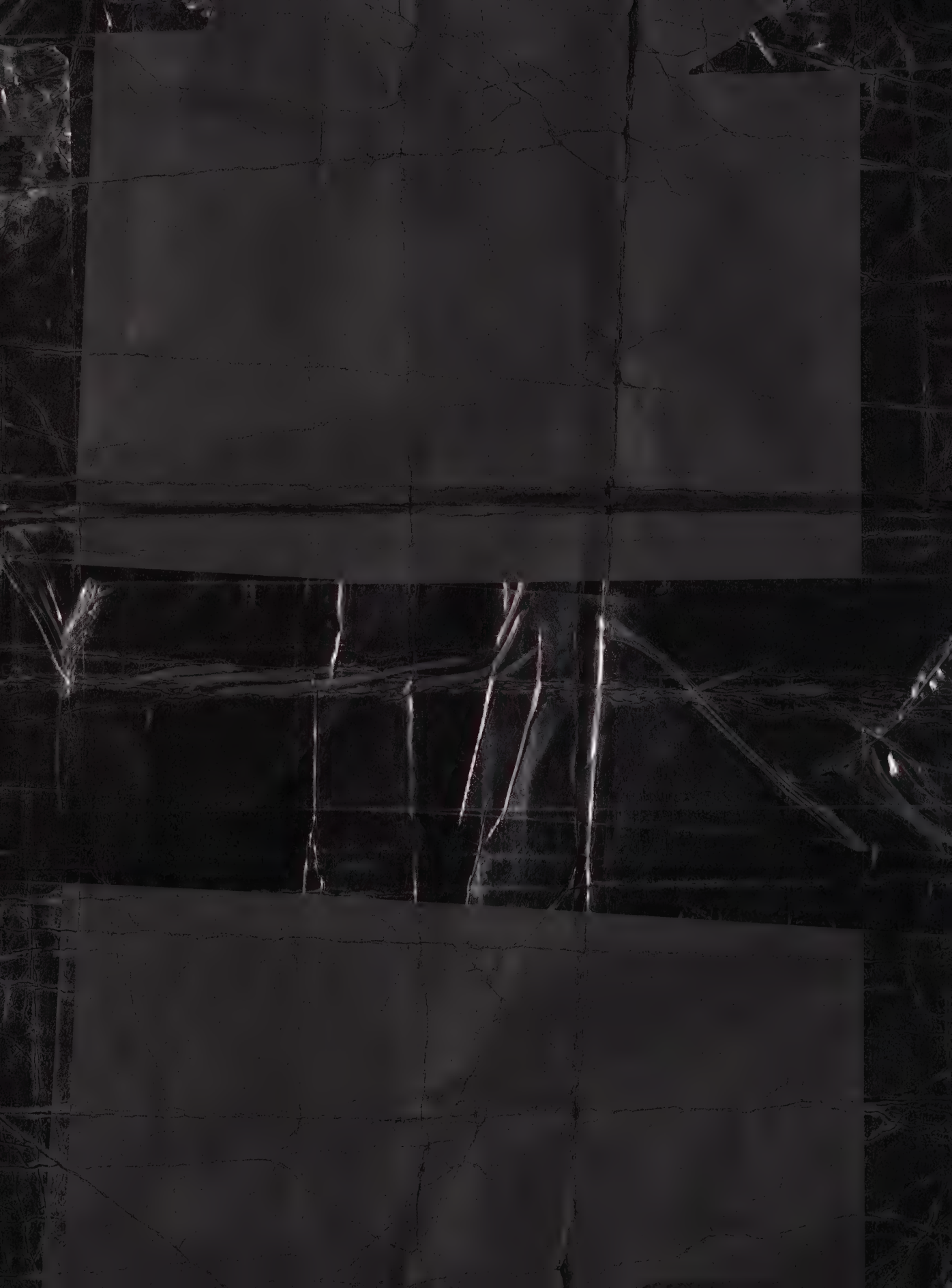
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

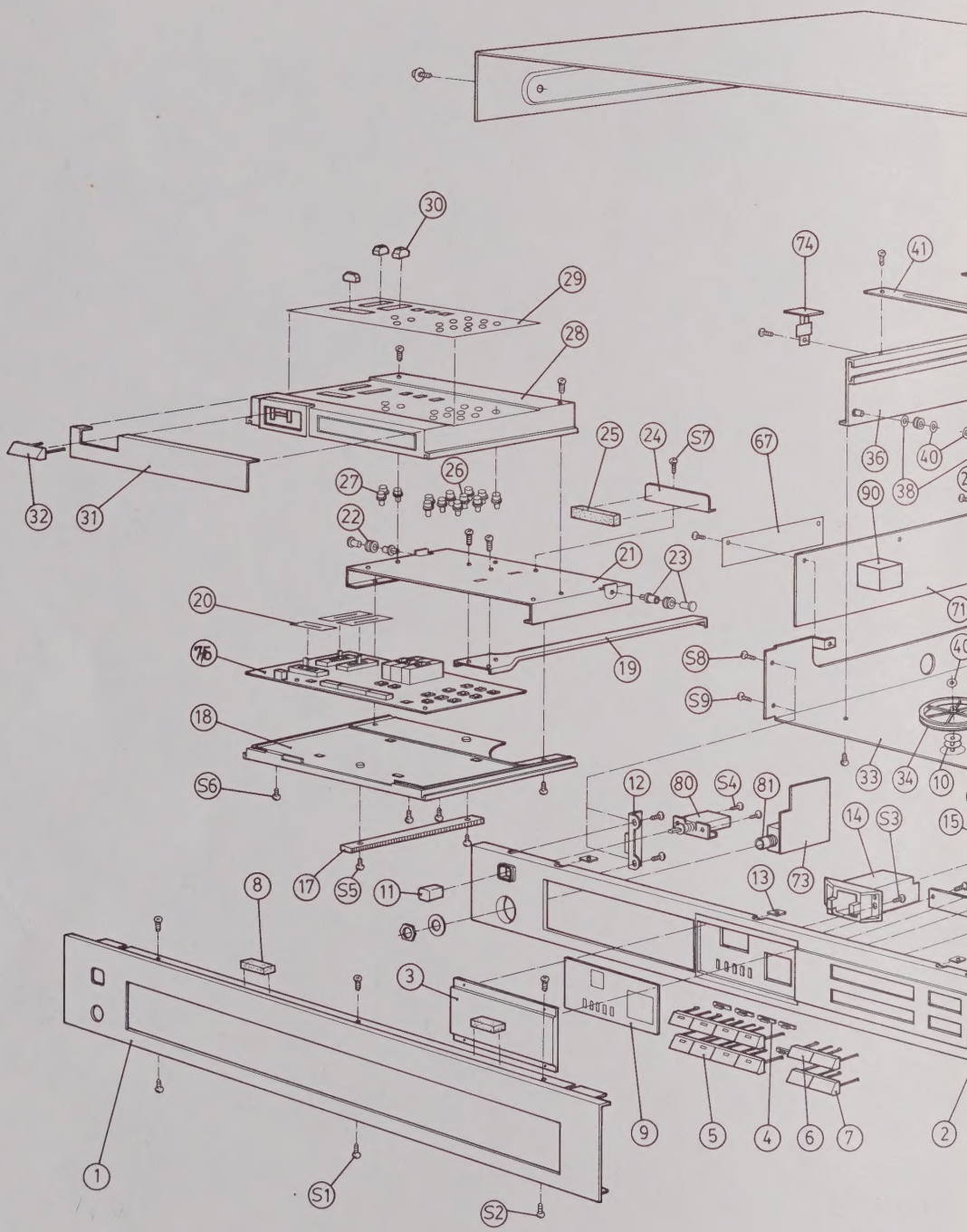
MECHANICAL PARTS LIST (601R)

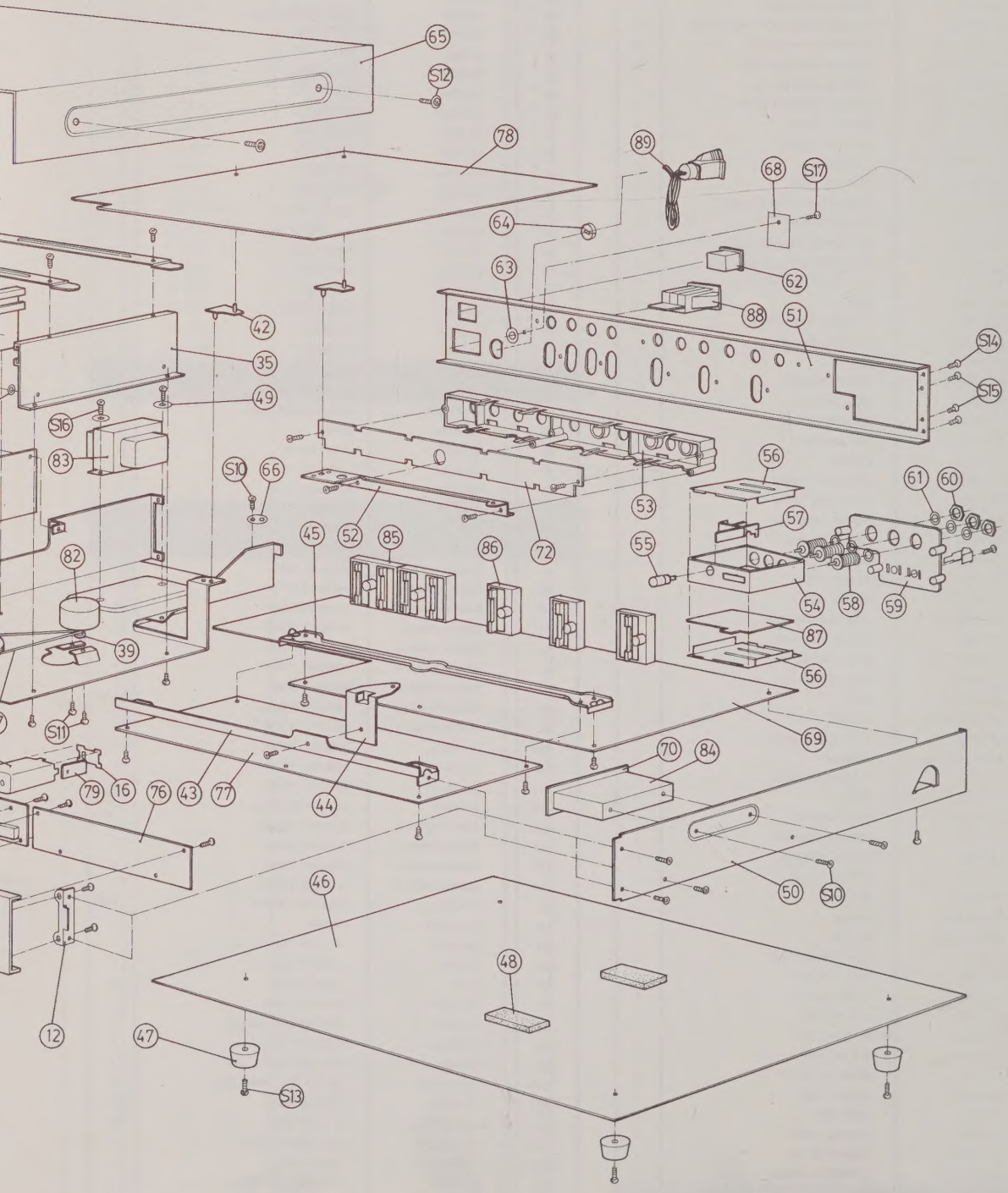
REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	11-1178	FRONT COVER	1
2	11-1177	REAR COVER	1
3	11-1176	BATTERY COVER	1
4	11-8354	ACRY. FILTER	1
5	13-4T08	TRIM SHEET	1
6	13-4T09	BRAND SHEET	1
7	12-3T29	RUBBER KNOB	1
8	11-5T28	BATTERY CLIP	1
9	12-1153	BATTERY CLIP	1
10	11-5T27	BATTERY CLIP	1
11	11-9156	BATTERY RELEASE	1
12	S6D02+I04SN-2	SCREW	6
13	S2D03+110SL-2	SCREW	1
14	19-1352	PCB	1
A1	CT-5T55	GIFT BOX	1
A2	26-0055	POLY BAG	1
A3	26-0606	POLY BAG	1
A4	34-1T08*A	BOLYLON (A)	1
A5	34-1T09	POLYLON (B)	1
AF	36-1001	BATTERY	2



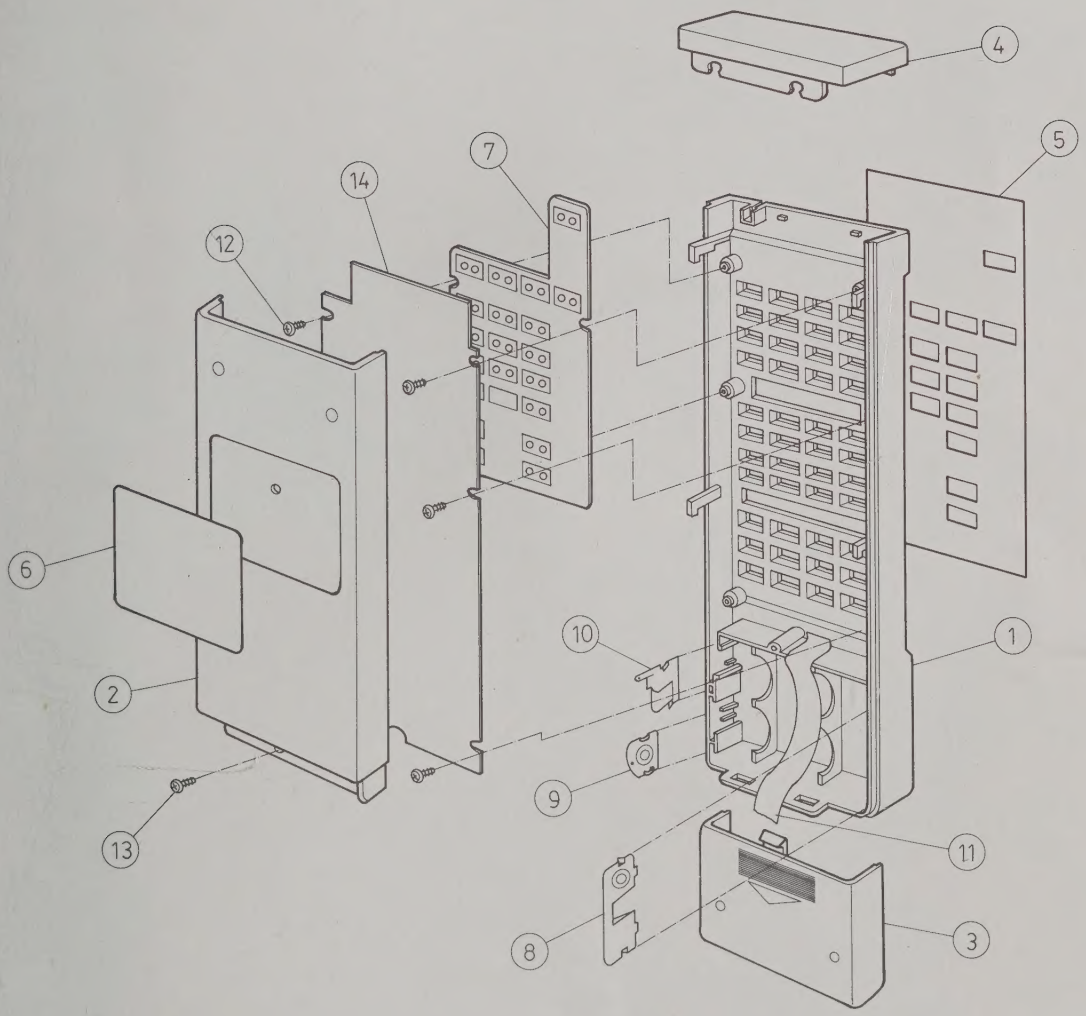


ASSEMBLY DIAGRAM (601T)




65
S12
78
89
68
S17
64
63
62
88
51
S14
S15
42
35
49
S16
83
S10
66
56
61
60
53
57
45
52
85
86
72
55
54
58
59
82
87
39
56
69
S11
70
84
79
16
76
43
77
44
50
S10
46
48
12
47
S13

ASSEMBLY DIAGRAM (601R)



PROTON

FULET ELECTRONIC INDUSTRIAL CO., LTD.
63, Sec. 1, San Ming Rd., Panchiao, Taipei Hsien,
Taiwan, R.O.C.
Tel: (02)9625135–40

PROTON CORPORATION
737 West Artesia Blvd Compton CA. 90220
U.S.A.
Tel: (213) 638–5151

Printed in Taiwan